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American Railroad Journal.

PUBLISHED BY J. H. SCHULTZ & CO., No. 9 SPRUCE ST.

Saturday, August 20, 1853.

The Legal Relations of our Railroads.

One of the principal excellencies that characterize the institutions of this country, is the simplicity of their operations. We take the shortest cut to a desired end. This tendency towards simplicity also shows itself in whatever we undertake and particularly in our railroad enterprises. Already in many of the states is the right to build railroads, as open to every citizen, as is that to build ships, or to erect manufacturing establishments. Such a right will soon become the law of every state. To commence the construction of a railroad the observance of certain formalities are required for the purpose of organizing companies, and to vest them with the powers necessary to execute their works, but the choice of route and plan, kind of road to be built, and the system of management to be pursued, is left entirely to the guidance of individual sagacity. We therefore squander nothing in "Parliamentary expenses." A

solicitor is no more necessary as counsellor for a railroad company, than for a ship builder. The objects that each have in view, are sufficiently obvious, and as government allows the parties to take the shortest road to them, the ordinary instinct of a shrewd business man is found in the end to be the safest legal guide.

Entire freedom is allowed in the construction and management of our roads. The only power that government retains over them is to prevent their interfering with the rights of other parties. They are amenable to government in the capacity of a general conservator of society. This object secured the interference of the former ceases. Our railroads, too, are taxed upon common sense principles that govern other transactions. Neither are the roads themselves, nor their franchises, taxed, for reasons that will be readily understood. The value of a portion of a road cannot be estimated apart from the value of another portion, or the whole. A road under the management of one company often traverses several states, and also different towns and counties, and it would be impossible upon any principles of equity, for each state, or county or town, to tax such part of the road as might lie within its limits. There could be no fixed standard of valuation, to which to refer the various parts into which a road might be cut up. The rule adopted, is that the improved property, or property that would be valuable without the road, which a company may own, is taxed where it lies. As the value of the road itself is represented by shares, these are taxed to the person owning them, wherever he may live, provided of course their ownership be ascertained, or the party resides in the United States. If a party residing in New York owns shares in a Georgia railroad, he is taxed for the shares by this city. Upon these shares there are no local taxations. In all cases the taxes are for a certain gross sum. Our roads in no cases are subject to parish or county taxes, nor to poor rates, as is the case with English roads. The shares and bonds of our roads held out of, are not taxed in this country. We presume the owners of such in England would be taxed for them as for so much personal property. The rights of stockholders are too well known to require notice. Those of the bond holders depend, of course, upon the nature of the contract

between them and the company. A mortgage bond is a lien upon the property of the company. The mortgage may embrace one, or more items of property, or all. When a first mortgage is made, covering the real estate, road bed, franchise and personal property of the company, any additions to the property, such as superstructure and equipment, is held by the same; and should a subsequent mortgage be created, the first takes precedence in all the above particulars. We state these facts, as there has been some uncertainty felt as to the rights of parties holding under two mortgages, and when subsequent additions are made to the property of the road.

In case of the non payment of the mortgage, or of the interest in the same, our courts of equity would place the trustee in possession of the road, and compel him to sell or manage it for the benefit of the mortgagees. The remedy for default in such cases is both simple and expeditious. We now recollect of but one instance where trustees under the mortgage have taken possession of a road, and that was the Vermont Central. We know of only one other instance among all our numerous roads, where default of payment has been made, and that was the Hudson and Berkshire. In this case the creditor was the state of New York, which also asserted its right agreeably with the stipulation of the original contract.

A bond without mortgage is simply a promise to pay, like a note of hand. It carries no lien upon the property of the company. In case of non-payment, a judgment will give the same rights to creditors, as far as the property of the company is concerned, as would a mortgage, but these rights do not vest until after a judgment has been obtained.

New Railroads in Michigan.

Four north and south railroads are in agitation. —First one from Dayton, via Adrian and Jackson to Lansing, and down the Grand river: 2d. The Cincinnati and Mackinaw road, via Dayton, Hillsdale, etc.; 3d. The Fort Wayne and Northern road, via Coldwater, Union City, Battle Creek, Hastings and Grand Rapids, and 4th, the Indianapolis and Grand Rapids road, via Three Rivers, Kalamazoo, etc. We are happy to learn that all the roads are to be constructed and put in the best running order immediately.

Manufacture of Locomotives.

The following article, written by the Assistant Editor, some months since, is republished for the useful suggestions it is believed to afford to those interested in or contemplating the prosecution of this business.

The best location for a shop is determined generally by the facility for obtaining the raw material, and delivering the finished machine. An establishment located upon the line of some important railroad, and accessible to the chief points of delivery through intersecting roads or navigable streams, would possess some advantages over another concern established with regard only to the expense of ground, the supply of labor, or established, as many such concerns are, without any special regard for outside facilities of any kind. In some locations water power can be obtained in connection with railroad facilities, but the expense of steam power, would be less than the expense of transport, in the case of a shop located far from a railroad, for the sole purpose of obtaining water power. The machinery of a shop, capable of turning out three locomotives per month, may be driven with from 2500 to 3000 lbs of coal per day. The expense of coal and the pay of an engineer, amounting possibly to \$1500 per year, and the expense of carting locomotives being perhaps \$100 each, for a distance of half a mile, or a mile, would strike the balance against any consideration involving the removal of a shop from the line of a railroad.

In the plan of a locomotive engine shop, the different departments of the business should be so connected as to allow of a ready delivery of the work from one part to the other, so that little labor will be required to get the various parts of the work together. A rectangular building, one story in height, devoted for one half of its length to finishing the bright work, and the cylinders and frames, and for the other half to setting up the locomotives, on two tracks running through the shop on that side of the building, will suffice for the principal shop. One end of the building may stand next to an open court, around which are the boiler and smiths' shops, the carpenters' shop and a separate shop for the heavy wheel lathes. The boiler shop being directly behind the finishing shop, the two "setting up" tracks may be extended across the yard to the door of that building, and the boilers can be delivered on trucks. The carpenters' shop and wheel shop are on a line, and form a range connecting the boiler and finishing shop, on the side of the yard nearest the setting up track. A track is laid through the centre of these buildings, and large doors open from each end. The tender tanks may be delivered from one end of the boiler shop, and placed in the wood shop, where they are mounted upon their frames, the wheels being fitted in the next room, and delivered on the track. The wheel shop has a door opening into the principal shop, and through this the driving wheels and trucks are delivered upon the setting up tracks.

The heavy parts of locomotives, frames, cranks, axles, braces, piston and connecting rods, are generally supplied at some forge or iron works. The smiths' shop therefore will seldom require more than a complement of single forges, and trip hammer, with the usual assortment of tools and formers required for hand forging.

The foundry may be in the rear of the other buildings, and accessible from a track laid upon the outside ground along the side of the whole establishment. This track affords a delivery for all the coal used for the engine and smiths' shop, and the iron used in the smith and boiler shops and foundry.

Over the tracks on which the engines are set up, are laid beams supporting a travelling hoisting apparatus, by which an engine can be raised in any part of the shop, for the purpose of putting under the wheels. Smoke jacks are inserted in the roof to allow of firing up the boiler within the building. The space between the rails of each track is excavated, and bricked on each side, forming a pit along the whole length, two feet or thirty inches in depth. This gives access beneath the engine.

The facilities for doing work economically and successfully, are much extended by adopting a regular system in each department of the business. All the work executed in the shop, should originate in the drawing office, and accurate plans should be made there to form a guide for the finish of every part. The working drawings should be made mostly to a uniform scale, which need not exceed one-fourth the full size of any part, and the sizes should be also laid down in figures. This plan once adopted, and pattern makers once taught to follow it, is a very sure guarantee against errors.

The rules and measures employed in a shop, should be taken from a steel standard, and the squares and levels should be tested to insure accuracy.

It is a system in some establishments to have each portion of the work contracted for by a master mechanic. He hires his operatives, and devotes himself entirely to that part of the business which his contract has allotted him. Under a system of efficient supervision, this plan tends to regularity of production, and uniformity of workmanship. It is the idea of the division of labor, carried to the full extent.

In continuation of the above and for the reference of a large class of western people seeking information upon this subject we will say that we believe a locomotive factory cannot be better organized there than by the influence and subscription of railroad directors and iron manufacturers. The former will secure favorable contracts for the establishment, the latter will supply the best materials for construction, and will contribute also, by their productions, to their share of what must ultimately be the form of a large part of the working capital. The management, upon the character of which, will, after all, depend the reputation of the works, must be confided to a practical engineer, well acquainted with all varieties of engines and who is sound upon all questions of improvements and manufacture. It has been the want of good management that has impaired the success of favorably located shops in Ohio. The same talent that organized the ill-fitted motive power of two or three railroads in the East has been transferred, with inflated expectations, to the West, and new works have yet to learn that to those only who have made the subject of locomotives a study, can they confide the charge of their business.

Nor do we know of any successful locomotive

shops which have been the common property of any large number of proprietors. Of all the large incorporated works in the East the number of corporations is but few, with the exception of the Amoskeag shop which is owned by a large company engaged in cotton manufacturing. But here however the locomotive shop is a distinct department of the works, and is under the sole charge of one man, O. W. Bayley, Esq., and this shop, for the character of its productions, ranks among the very first in New England.

The principal elements of success of a locomotive shop are, a command of good orders, a location favorable for access to the raw material and delivery of work, and an abundant supply of good labor. Capital, influence, location and materials can all be readily furnished in Pittsburgh, Cincinnati, St. Louis or Detroit, but the remaining element,—that of labor,—we should say would, at the commencement, be preferable if organized under the charge of those acquainted with the business, in other words, the most reliable hands should, in starting, be obtained from the East, while a little familiarity with locomotive work would soon make the new establishment independent of outside assistance.

While we press the value of the service of Eastern skill, we would suggest that Western capitalists inviting such aid should provide a proper accommodation for its emigration. Good dwellings, convenient markets, and good schools are important considerations to New England working men.

New York and Erie Railroad.

LONDON, 29th July, 1853.

MR. EDITOR,

SIR:—You know too well to need informing by us, that the parties interested in the stock and bonds of the Erie Road have grounds of complaint of the want of official reports and other proper information of the circumstances and progress of the company. We are fully apprised, on this side of the water, of the recent omission of dividend on 1st July, of the rumours current in New York on that occasion, of the speculation that the news would affright the bondholders in England, and on the continent of Europe.

It is a matter of some surprise to us that the Stockholders seem so inert and passive during all the agitation and discussion of the merits and demerits of the Erie road and its management, for it appears that nearly the whole interest of the much vexed question of the management concentrates upon the Shareholders as a class. As Bondholders we feel secure of an interest from a road of such large resources, even supposing the conduct of the line to be far from excellent—but to the Stockholders it is of vital importance how the road is managed—whether upon prudent or imprudent, upon good or bad system, as upon this entirely depends whether the Stockholders are to have small dividends or large ones, whether their stock is to be worth 100 or 50. Upon the economical working of the traffic, accompanied by a vigorous and masterly arrangement of the finances, or Capital Account, depends the probability of reducing hereafter the amount of the company's annual liability for interest, and the increase of the dividend fund. All this tells with accumulating effect upon the Shareholders. They collect all the good effects and all the bad effects of the mode of management into a focus. How is

it then that they do not stir themselves to some vigilant activity in the company's affairs? The stock is nearly all in American hands. It is an odd thing for plodding money making (and often losing,) John Bull to have to ask his shrewd cousins in New York whether they have gone to sleep on a property of \$10,000,000, which is valuable or otherwise just in proportion as the owners are more or less wide awake.

There can be no question that in a little while the road may be made highly remunerative to the Stockholders; but it is equally beyond doubt that the best resources require good management to develop them. We should much like to hear from New York that the general body of Shareholders are putting their shoulders to the wheel with a vigorous determination that the road shall have the highest character and earn the best profits that can be attained. The needful effort may require a little temporary self-denial on their part, but it would be in the end well rewarded. There should be an end fixed to expenditure; a limit to the loans; close economy in working; dividends honest beyond impeachment, and a sinking fund to reduce somewhat the disproportion between loans and stock.

Yours Respectfully,

HESELTINE & POWELL.

It will be borne in mind that at the last annual meeting of the stockholders of this company, its affairs were believed by them to be in a prosperous condition. Since that time there has been no opportunity for a direct expression of their opinion. This cannot now take place till their next annual meeting, which occurs, we believe, some two months hence. Till then, all they can do is to vent their complaints individually, which is done in no very soft nor gentle terms.

As much as we have disliked and censured, in the *Journal*, the management of the directors, we see no reason to doubt that the revenues of the company will be ample to meet the interest on its indebtedness. Of the future value of the stock we are by no means so clear. But the value of the stock is of but little importance, compared with that of the bonds. The former is almost entirely held in this country. It has never been a stock that any well-informed house in this city, engaged in railroad negotiations, would have ventured to have recommended to its customers, nor any well-informed foreigner thought of purchasing. More than two years since, we repeatedly cautioned foreigners against it, and predicted the explosion that has since taken place. We saw that our own people were running mad upon Erie, and we determined that foreigners, who could not understand the causes of this infatuation, should not suffer by it, and thus get a prejudice, which might be without any good foundation, against other works. Though we consider the bonds of the company entirely safe, they were without those guarantees which a foreigner should always require, which will render him perfectly safe, and at the same time do us a vast deal of good, by rendering it impossible for our people to build roads entirely upon credit;—a stock subscription equal, or nearly so, to the amount of the credit asked.—The value of this rule has been too often insisted upon to need repeating here, and if not adhering to it, foreigners occasionally make a bad bargain, they have only to blame their own improvidence.

As before remarked, the people of New York

have been laboring under an infatuation in reference to the Erie railroad. In 1845, in imitation of the efforts of other cities, particularly Boston and Baltimore, the construction of this work was resumed. It was taken hold by our active business men, under a conviction that it was necessary to the maintenance of the western trade. Under this idea, it became the pet project of the city, and from this fact, no difficulty was found in procuring sufficient funds to carry the project forward with an energy which contrasted most favorably with the dilatory manner in which it had proceeded under former administrations. This apparent success could not fail to beget some self-satisfaction, that a body of inexperienced men could take up, after repeated failures, a work of such magnitude, and carry it on to a successful completion. They secured at the same time the gratitude and confidence of the community. The apparent success which was achieved completely blinded the eyes of the public as to the manner in which it was effected. They forgot that upon a line possessing all the advantages of the Erie even, only a moderate profit on the stock of the company could be expected, and that not a cent could be lost in construction without being felt in dividends. Unfortunately the parties who stood at the head of the management lacked the training necessary to fit them for their places, and that sound judgment which often supplies the want of it. The result was, that vast sums were lost by bad management, both in the construction and operation of the road, a sum no doubt fully equal to the present amount of the capital stock. For a time, there was but little use in pointing out the mistakes that were being committed. In fact, a person could not do so, without being accused either of some improper motive, or wanting in public spirit or loyalty to the best interests of the city. A paper that did not puff *Erie*, was outlawed in public opinion.—The entire city press, with perhaps an exception, daily celebrated the merits of this work and its management. Thus shielded from public scrutiny, and certain of popular support, the directors of this road have pursued a course which would have involved any work in ruin, and which has brought this company to the very brink of it. The public at last listened to a timely alarm that was given, broke from the spell under which they had been so long held, and began to ask whether the management of the company was what they supposed it to be. The result of these enquiries we are all familiar with. They have shown that the dividends had not been earned, that the management of the company had been in the highest degree improvident in almost all important particulars.—Their good effect is also equally conspicuous. Already has a new system of management been adopted; new and more competent persons called into the Direction, and the parties most responsible for the past management of the company, have retired. The great point to be obtained, was to convince the stockholders that the road had been *mismanaged*. This being gained, the remedy will now follow as a matter of course. If the present parties who have the working of the road in charge are incompetent, they must give place to others that are. The stockholders are now in such frame of mind, that they will not stop short of the most thorough and searching reform. Of this we think all may rest assured. We think, too, that the

rights of bondholders will be maintained inviolable, that no more dividends will be paid, unless earned, and that the most vigorous effort will be made to make the most out of this great work.—Whatever may be the real worth of the stock, it is certainly much more valuable now than it was six months ago. Its value then was in danger of being entirely wasted. Now, whatever it is, it will be saved.

The mistakes of this company will not be without their use in the management of other works. Above all they will show that, no matter how strong may be the route of a proposed road, not a cent can be lost without being felt in dividends.—The Erie people believed they held the key to the trade of the West, and that the prospective business of this road justified any degree of extravagance. The fallacy of such an assumption is not only shown by the results in the present case, but is also proved by reference to other roads having the largest incomes. Many of these have great difficulty in making even moderate dividends. The profits of a road do not so much depend upon the amount of its revenues, as upon the manner in which it has been built and managed. This fact our people are fast beginning to find out.

Journal of Railroad Law.

LIMITING THE LIABILITY OF RAILROAD COMPANIES AS TO CARRIAGE OF LIVE STOCK.

The English Court of Exchequer, last year decided in the case of *Carr vs. the Lancashire and Yorkshire Railway Co.*, that a party delivering to carriers a horse to be carried from A. to B. the ticket or way bill containing the following notice:—

"N. B." This ticket is issued subject to the owners undertaking all risks whatsoever, as the company will not be responsible for any injury or damage (howsoever caused) occurring to live stock of any description travelling on or in their "vehicles" could not recover damages from the carriers, although the horse was killed by means of a collision occasioned by the gross negligence of defendants. The following authorities were cited by the Counsel for defendant on the argument of the case before the full bench. *Wyld vs. Pickford* (8 M. and W. 443). (*Stuart vs. Cramley* (2 Stark 323). *Furnival vs. Coombs* (5 Man. and G. 736.) *Shaw vs. the York and North Midland Railroad Co.* 13 2 B. 347 *Chippendale vs. the Lancashire Railway Co.* (15 Jur. 1106) *Austin vs. the Manchester Railway Co.*, 16 Jur. 763.

In deciding this case, PARKE BARON observed that it was very clear that since the Carrier's Act, 11 Geo. 4th. and 1 William 4th, it was competent for a carrier to enter into special agreement with the person who sent goods to be carried,—and it was also clear that the conveyance on the case before him, was under such a special contract between the plaintiff and the defendants, and the only question is as to their meaning. It was reasonable that carriers should protect themselves by that special contract against all liabilities in such cases, as the present. Formerly carriers carried live cattle very seldom, sheep seldom, horses never. Since the introduction of railroads the case was different, and animals were frequently carried. The carrying of them was a dangerous thing, not merely from the ordinary accidents of Railway conveyance, but also from this, that they were conveyed in a carriage which was it

self a source of much danger. The animals might from fright destroy their own lives. With respect to the contract in the present case, the owner took upon himself all the risks of transit, the company agreeing to furnish carriages for the purpose, and to cause them to be impelled along the line,—but every risk was on the owner himself. And considering the many risks to which the horse was liable the contract was not unreasonable.

A similar opinion had been pronounced in the Court of Common Pleas in the case of *Austin vs. the Manchester Railway Company* in which the words of the contract did not appear to be different in effect from those in the present case. That was an action for negligence in not taking due care against fire, the carriage in which the plaintiff's horse was placed was destroyed by fire. In this case the ticket among other things declared that the company would not be liable for any damage, however caused, to horses, cattle or live stock of any description, travelling upon the said railway or in the defendant's vehicles. The injury was occasioned by the wheels not having been duly greased, and the Court of Common Pleas held that the plaintiff had taken upon himself all risks from that source. It was not for the Court to fritter away the contract and take away the plain sense and meaning of it, because the effect of a different decision might be to make carriers less careful. If contracts of this kind are wrong in themselves it was not for the Court to rectify the mischief by putting an erroneous construction upon them; it was for the Legislature to interfere if they thought proper.

ALDERSON BARON, made the following keen suggestion which is well worthy the notice of railway companies which transport live stock, purporting that although a carrier may by his ticket exonerate himself from any liability for damage done to live stock, he may yet be compelled to pay for the live-stock if stolen from him. For the stock merely changing hands might benefit rather than injure it. Notices should be broad enough to cover the case supposed.

"It might be fairly argued that from the whole of this ticket taken together, the breach of duty must be such as to cause injury or damage to the thing conveyed. That would not affect the decision here, though it might raise a question if the horse had been stolen; for although that would be a risk of conveyance, still it would not be one resulting in damage or injury to the thing or animal conveyed. Here, however, there was injury to the horse conveyed; in which case the defendants had contracted that they were not to be responsible. Such is the plain contract.

MARTIN BARON agreed with his brothers, Parke and Alderson.

Both by common law, and by the carrier's Act, he thought carriers might enter into special contracts. As insurers, common carriers are answerable for the gross negligence of themselves or their servants, and if it was competent for a party to make himself answerable for gross negligence, he surely might contract that he should not be liable for it. If that be so, it was impossible to use language to carry out the intentions of the parties more clearly than the language of the ticket in the present case.

As to public inconveniences that may result

from the contracts, it was for the parties to judge of that, the sole province of a court of law being to carry out the contract. The Baron admitted that from the construction now put upon the contract, a great temptation to carelessness may arise to railway servants carrying valuable articles, by their not being responsible even for gross negligence. But look at the other side. If they are to be responsible notwithstanding such a provision as is contained in this notice, it must be obvious that the company would be in fact insurers of live-stock, for questions of fact are admitted to juries, and they would be very apt to consider every case of negligence as gross negligence. There were therefore inconveniences both ways; although inconvenience should be no test, it being for parties to enter into their own contracts. The true construction of the notice is that defendants were not to be responsible for any damage to the horse from any peril of the carriage.

PLATT BARON, would not oppose the opinion of the majority of the court, but was startled at the proposition that carriers could be exempted from the consequences of gross misconduct. The owner never dreamt of such a thing when he signed the ticket. His view of the matter however might be wrong.

Alleghany Valley Railroad.

We have received the report of W. Milnor Roberts, Esqr., Chief Engineer of this road, upon the surveys made from Kittanning to the New York State line.

Four main lines of surveys have been made, the preference of which is given by the engineer to the "Mahoning and Red Bank route." This route leaves Kittanning and runs across the favorable river bottoms and along the bank of the river to the mouth of the Mahoning, 10 miles, and continues in the valley of that stream, crossing it at one point, and tunnelling 910 feet through a projection at a bend in another. Here the maximum ascending grade of 52.8-10 feet per mile occurs for eight miles. Below Levalley's summit there will be three tunnels besides the one named, 930, 1235, and 495 feet long respectively. Levalley's summit is also passed by a tunnel of 1290 feet long. These are all the tunnels which occur on the entire route and comprise an aggregate length of 4860 feet. Beyond Levalley's the line runs along the left bank of the big Bend of Red Bank, on a descending grade, to its crossing of the stream at New Bethlehem, on the twenty-third mile. From New Bethlehem the line follows the bottom lands on the right bank of the Red Bank Valley, over favorable ground, for eleven miles where it crosses the stream at Heathville. Thence the line pursues its left bank, passing Troy on the thirty-sixth mile from Kittanning. Two miles beyond, it recrosses the stream, beyond a cut 900 feet long and averaging 50 feet deep, and extends to Dowlingsburg on the thirty-ninth mile, and Brookville, the county seat of Jefferson, on the 44th mile. The line then follows the north fork of Red Bank over favorable ground, except at the 49th mile and 50th mile, where heavy embankments and wide culverts are necessary. The line continues in moderate side-hill work, with the exception of a heavy embankment and culvert at the 100th mile, to the middle of the 104th mile, where a cutting commences extending nearly one mile, having an extreme depth of 38 feet, and requiring about 120,-

000 cubic yards of excavation. Here is the main summit of the line at the end of the 105th mile, near the town of Teutonia, 1298 feet above low water at Kittanning. The maximum grade of 52.8-10 feet per mile also descends from this summit going north. At a point 11.8-10 miles beyond Bishop's Summit the line crosses Potato Creek, into the level and favorable valley beyond. This portion has an average grade of 49 feet per mile, upon which curves as sharp as 1000 feet radius occur. Beyond this crossing to the state line, the road will have a very favorable location, both as to grades and curvature.

The main route, designated as the "Mahoning and Red Bank route," extends 133½ miles from Kittanning, or 176½ from Pittsburg; has 3,012 ft. of total ascent and descent, 4,860 feet of tunnels, and is estimated to cost for graduation \$2,565,224.

A revised line of this general route, recommended by the Engineer, will increase it one and a quarter miles in length, and secure more favorable grades.

We give the conclusion of Mr. Robert's report, addressed to Hon. W. F. Johnston, President of the Alleghany Valley railroad:

On an examination of the prominent characteristics of this route, it will be observed that there are comparatively few miles or sections of very heavy work, namely: six between the Mahoning and Red Bank, and seven between Bishop's summit and Smethport. There are but ten others, occurring at intervals between New Bethlehem and Bishop's summit, which can be regarded as heavy work. With these exceptions, the entire route is remarkably favorable for the construction of a first-class railroad, with generally moderate curves and very easy grades. The maximum grade of 52.8-10 feet per mile, is only used in three instances: in ascending from the Mahoning to Lavelly's summit, 7 miles; in ascending the east branch of Clarion, 10 miles, to its head at Bishop's summit, and in descending thence along the Red Mill brook, to Potato creek valley, 11½ miles; and on all the curves, it is reduced not less than 2-100 feet per station of 100 feet for each degree of deflection from a straight line.

It has other features worthy of special attention, taken in connection with the division between Pittsburg and Kittanning (43 miles). On 53 consecutive miles from Pittsburg to the mouth of the Mahoning, there is no ascending grade exceeding 26.4-10 feet per mile, no descending grade over 10.56-100 feet per mile, and no curve with a shorter radius than 1432 feet. On 25½ consecutive miles in the valley of Red Bank, there are no grades exceeding 26.4-10 feet per mile. On 23 consecutive miles in the valley of Clarion, there are three grades exceeding 26.4-10 feet per mile; and on 18 consecutive miles extending along Potato creek, and the (upper) Alleghany river to the New York State line, there is no ascending grade at all, and no descending grade exceeding 10.56-000 feet per mile. Thus making 121½ miles, in four sections, each continuous, on which the maximum grade employed is 26.4-10 feet per mile.

From Bishop's summit to the State line, thirty miles, where the heavy coal trade of Western New York and the Lakes will cause a preponderance of tonnage northward, the line is all descending or level; and at the Pittsburgh end on a distance of 62 consecutive miles, where the iron, coal and lumber, from Clarion, Armstrong, Jefferson, and other counties, will yield a heavy tonnage towards the Pittsburgh and river markets, the line is so arranged as to have no descending grade against this trade exceeding 10.56-100 feet per mile.

The profile of the New York and Erie, Pennsylvania Central, Baltimore and Ohio, or Virginia Central railroad, will not present features at all comparable with the line of the Alleghany Valley road; whilst the latter will be much cheaper per

mile than either of the others. These valuable characteristics of your route, cannot fail to have an important bearing, not only on the amount of traffic your road must command, but on the proportion of profit to be derived from its transportation. The line can be advantageously divided into convenient sections for running the road in the most economical manner, and there is no spot on the entire route, where trains may not safely pass at the rate of forty miles an hour.

Regarding it as a main trunk road, which it assuredly is, connecting the extensive net-work of New York improvements by the nearest and best practicable route with the navigable waters of the Ohio and Mississippi, and, by chains of roads through Ohio already far advanced towards completion, extending that connection by railroad from Pittsburgh and Cincinnati, on the most direct route, and to St. Louis, and the fertile States of the south-west, its estimated cost (certainly under \$30,000 per mile,) must seem very moderate when compared with the magnitude of the results which may fairly be anticipated from its completion.

You are acquainted personally with the route, and therefore know that a large portion of it passes through, and in such a manner as to control, a fine agricultural region, even now abounding in the profitable elements of railroad business, and capable of furnishing a large agricultural surplus. The counties in Pennsylvania that will be tributary to it, contained, according to the census of 1850, a population of 363,000; whilst the five counties of Western New York directly interested in connecting with this line, and which are now actively engaged in building three distinct railroads to unite with it, contained at the period a population of 523,000. In three years, or about the contract time for completing your road, the combined population in the counties mentioned, in the two States, will not be less than 1,300,000.

The opinion which has been promulgated, that this road is in advance of the wants of the country, is entirely erroneous. The Bellefontaine and Indiana road, in Ohio, which has been opened within a few weeks, with its stock ten per cent. above par, has a larger proportion of unimproved land upon its borders, and a much smaller local population, without any important town upon its route or at either end, whilst the Alleghany Valley line presents direct and convenient connections between the important cities of Pittsburgh, Buffalo and Rochester, containing an aggregate population at this time of over 200,000. It is well known that it passes through the finest iron region in the State, which also abounds in coal and limestone of the best quality. It will also form an outlet for an immense amount of pine and cherry lumber of the most superior quality, the demand for which is annually increasing.

But I will not attempt to portray in detail what may be termed the great natural advantages of this line; most of these have already been ably described in the pamphlet prepared for yourself in 1852. There is one striking feature in connection with your road which should not be overlooked, furnishing as it does the strongest security of a large local business, which eventually must become on all our great lines the chief source of profit: it is this—that there is a larger local population on the first sixty miles of the Alleghany Valley Railroad, than the same distance on any other route leading from Pittsburgh.

The opening of continuous rail roads from Boston, Albany and New York, by way of the Alleghany Valley Rail Road to Pittsburgh, will constitute an important era in the business history of this city, which cannot now be fully appreciated.

With such a route, and with such connections as the position of your line places at your command, you have the strongest inducement to push forward this great public improvement with the utmost vigor; and, from the well known character and ability of Messrs. Chamberlains, Leech & Co. who have the contract for doing the

entire work,—except furnishing iron,—there is every reason to expect that it will be completed during the season of 1856, as provided in the contracts. They are required to open it for use between Pittsburgh and Kittanning (and this may easily be extended to the mouth of Mahoning,) early in the fall of next year; and, if the iron be promptly furnished, the Board may anticipate a compliance with this stipulation.

The few general remarks introduced will not, I trust, be considered altogether irrelevant to the subject of *Surveys*—which I take great pleasure in stating, have been conducted with admirable skill and perseverance, by my excellent Associate Engineer, George R. Eichbaum, and Messrs. Robert W. Clarke, J. S. Lawrence, Franklin Wright and Charles M. Boyle, principal Assistant Engineers, and their assistants, aided by J. J. Siebeneck, our efficient Draughtsman. Messrs. Clarke and Lawrence are now in the service of other companies. Messrs. Wright and Boyle are engaged with two full parties in revising lines preparatory to final locations.

The work of construction on the division between Pittsburgh and Kittanning is in active progress under the immediate charge of Captain T. J. Brereton and Mr. James C. Noon, Assistant Engineer, and Mr. James Morley, Junior Assistant. It is arranged in three sub-divisions.

To all of the gentlemen connected with the Engineer Department, I beg leave to offer my sincere thanks, for the uniformly faithful and courteous manner in which they have performed their respective duties.

European and North American Railway.

We had the good fortune to be present yesterday, at an informal meeting of several gentlemen friendly to the European and North American Railway, called together by the Directors, for the purpose of advising upon the line of policy to be adopted in view of their pending negotiations with Messrs Jackson & als., for the building of the entire line of said Road, from Calais to Augusta.

On the 5th of August Messrs. Jackson and Betts, for themselves and partners proposed to pay the expense of a survey of the route, and on the information thereby obtained, they would fix upon a price for building said road, based upon said surveys,—the same to be paid for by said company in the manner following, viz:

20 per cent of the cost	in Cash.
30 " " " "	" Stock at par.
50 " " " "	" Bonds "

The character of the road to be equal to that stipulated for in their contract with the Grand Trunk Railway of Canada, with a permanent way, iron tubular bridges, and fully equipped with engine power, equal to 1 engine to every 5 miles of track, &c.

The road to be commenced upon forth with, and completed in 1857, throughout its entire length.

After the surveys are completed, the company are to pay the expense of the surveys, in case no contract is concluded with Mr. Jackson and his associates. If a contract is closed with them the expense of the survey is to be included in their contracts.

These proposals the Directors voted unanimously to accept. Thereupon Mr. Morton was directed to take charge of these surveys, and the money therefor placed in Bank by the contractors.

It is now rendered certain that the cost of the line will not exceed \$6,000,000, and that 20 per cent. of that sum, raised by subscriptions to stock, will secure the immediate construction of the line.

One party of engineers is already in the field and others are to follow shortly.

The question proposed by the Directors was: Can we raise our portion of the required sum.

Assuming the amount to be \$1,200,000, which will cover the entire sum required, we have the whole State to look to for contributions thereto.

Besides this, it is quite apparent that the raising of this amount, at once places the company upon such a footing as will prevent any sacrifice of its stock or bonds hereafter.

Then again the parties holding 80 per cent. of the stock and bonds, who are to sell their securities in the English market, will have every inducement to keep up their price.

We are informed that the principal reason for asking this subscription in Maine is, for the assurance it gives of the confidence and "good will" of our people. If this does not exist, no foreign capitalist would for a moment entertain the thought of coming among us with his money.

Our belief is, that within one year of the completion of this subscription of \$1,200,000, and the consummation of this proposed contract with Messrs. Peto, Brassey, Betts and Jackson, the whole of the European and North American Railway stock, will be made a permanent 5 per cent. stock and sold *above par* in the London market.

In fact, we have a right to say, that but for the short-sighted policy of our own people in Maine, the European Road might have been made a part of the Grand Trunk Railway scheme, in the English market in April last.

The European and North American Railway is not merely a local line, which has no credit beyond its own locality. It is in fact an international work, which may seek with entire confidence the market of the world. Its name alone is worth a vast sum, in making friends on both sides of the water.

But no scheme, however strong on its own advantages, can go into a foreign market with success, in the absence of *strong local support at home*. Intelligent foreigners will not invest money in projects that have not the ability to inspire confidence among the monied men of the region where they are built. We should not advise, or consent even, to have the European Road built by foreign capital alone, as much as we suffer for want of capital in Maine. The scheme cannot be a sound one, unless our people are willing to embark a portion of their means in its construction.

In New Brunswick, the Government took 25 per cent. of its cost at the out-set, in stock, and they loan the credit of the Province to the amount of 22 per cent. more. Individuals take a portion of the remaining cost, and the residue of the money required is furnished by the contractors.

It is gratifying to know, that so far as we have heard, there has been but one expression on the subject, and that is in favor of the proposed plan, and no one has to this time supported a doubt of our ability to raise *one fifth* of its cost.—*State of Maine.*

Mineral Point Railroad

We are indebted to Hon. Moses M. Strong, President of the Mineral Point Railroad Company, for a copy of the first annual report of the Directors of that road. We would gladly publish some extracts from this document, did our space permit. The Mineral Point Railroad is a very important one to the Lead Region of our State.—The report of the Directors estimates that the entire road, when finished and fully equipped, including all necessary depot buildings &c., will cost only \$592,950, being less than \$18,000 per mile for 31 7-10 miles. The means of the company are thus stated:

Stock Subscriptions.....	\$125,800.00
Iowa County Bonds.....	150,000.00
First Mortgage Bonds.....	317,000.00

\$602,800.00

Showing a surplus of nearly \$40,000 over the estimated cost of the road.

This road taps the very heart of the lead mines and promises to be one of the best Railroad enterprises, as an investment, in the Northwest. It is perhaps not out of place to say that the Officers of the Company enjoy the full confidence of all in-

interested in the road. Mr. Strong the President, in one of the earliest settlers in the State, having resided in the lead mines more than seventeen years, and has made the geography and topography of our State peculiarly his study.—He has frequently been called, by his immediate neighbors to represent them, in the Territorial and State Legislature. In the former he was twice elected to the office of President of the Senate and under the State government he presided as Speaker in the House of Representatives.—*Milwaukee Sentinel.*

Racine, Janesville and Mississippi Railroad.

From the recent exhibit of this company we have the following statements:

The company was organized under a charter granted by the state of Wisconsin, in Nov. 1852, for the purpose of constructing a railroad from the city of Racine to the Mississippi river. Immediately after its organization, full preliminary surveys were made, and the first division of the line extending from the city of Racine to the Village of Beloit, on Rock River, a distance of 65 miles, was put under contract on the first day of April last. The work of grading was at once commenced and has been vigorously prosecuted by a large force, so that the first sub-division, from the Lake to Fox River, a distance of 26 miles, is in a good state of forwardness, and will be ready for the superstructure in September. By the terms of the contract, this portion of the line is to be in running order and equipped by the 1st day of January, 1854, and the entire line to Beloit is to be completed and stocked ready for use, by the first day of September, following. The contract provides for a first class road, with full equipments and rolling stock of the best quality and most approved kind. The iron is to be of the best quality of the T pattern, and to weigh sixty pounds to the lineal yard. The contract includes everything pertaining to the work, except land damages, depots, and engineering; hence the entire cost of the road when in complete working order will not cost to exceed \$22,000 per mile. By the accompanying map it will be seen that this line of road traverses the richest and best settled portions of the state, and secures most important railroad connections at several different points, furnishing an outlet to the lake for nearly 600 miles of railroad and enjoying an advantage in point of distance of from twenty-six to thirty-three miles over any other road running to Lake Michigan, besides being a straight line.

At Burlington, 25 miles west of Racine, it will intersect the Fox River Valley Railroad and the Racine and Portage City Railroad. At Elkhorn, the county seat of Walworth county, 40 miles west of Racine, it will intersect the Wisconsin Central Railroad. At Beloit it intersects and connects with the Beloit and Madison, and Belvidere Branch Railroads, both of which are now in process of construction, and to be completed in a few months. At Rockton it will intersect the Rock Island and Rockford Railroad, also in process of construction. At Freeport it intersects the great Illinois Central Railroad, and the Savanna Branch Railroad. The Mineral Point Railroad now building intersects the Illinois Central Railroad a few miles west of Freeport, thereby enabling this line to compete for the business of that point also. The vast advantage in point of distance, possessed by this line, at all the above points, must command for it a freight traffic equal to any other western road. This line will also offer good advantages to travellers, to all parts in Wisconsin, Iowa and Minnesota; and from those states to all points on Lake Michigan. At Racine there will be three routes eastward, viz: By steamboat, or the Lake Shore Railroad via Chicago; by the Grand Haven and Detroit Railroad, and by the Lake route through the Straits of Mackinac.

This line also affords the shortest route from the Lake to the Mississippi river, an advantage which, from the natural position of these waters it must

always enjoy. The second division of this road will be from Beloit to Freeport via Rockton, for which a charter has been obtained from the state of Illinois. The entire line of this road from Racine to Freeport, passes through an agricultural country unsurpassed if equalled in the west; while the roads connecting at Freeport, penetrate the extensive lead mines of Illinois and Wisconsin.

From a careful estimate, based upon data furnished by the United States census of 1850, it is confidently believed and expected, that the local business alone upon the line of this road will afford a net income of at least 8 per cent. upon its entire cost; while the through business and the business thrown upon this line from its connecting roads, may reasonably be expected to equal its local traffic, and the possibilities are that it will greatly exceed it. These results might be easily shown in detail, did space permit.

The entire cost of the 65 miles of road now under contract, estimated at \$22,000 per mile, amounts to..... \$1,430,000 To provide for which the company have the following resources:

Personal subscriptions to the amount of.....\$403,375
Corporate subscription of the city of Racine..... 300,000
Corporate subscription of the town of Beloit..... 100,000
Corporate subscription of the town of Delavan..... 25,000
Bonds of the Co. negotiated to the contractors..... 646,750—\$1,475,125

The bonds of the city of Racine issued in payment of its subscription to the capital stock of the company, are now offered for sale to the amount of \$300,000 with 7 per cent interest payable in the city of New York in twenty years; the interest thereon to be paid annually.

The bonds are issued in sums of \$1,000 and of \$500, and are made convertible into the stock of the company at the option of the holder. They are also guaranteed by the company, and the interest is made payable semi-annually.

The officers of the company are as follows:

Henry S. Durand, President; Chas. S. Wright, secretary; Simeon Draper, New York city, treasurer; H. J. Ulmann, cashier Bank of Racine, ass't treasurer, James R. Doolittle, Esq., attorney; and Leverett H. Clark, Chief Engineer.

Directors.—Elias Smith, Reuben M. Norton, Isaac Taylor, Marshall M. Strong, Charles Herrick, John Dickson, Charles S. Wright, Henry S. Durand, all of Racine; Edwin Hodges, Elkhorn, Walworth county; Wm. C. Allen, Delavan, Geo. B. Sanderson, Beloit, Rock Co.; Wm. A. Lawrence, Janesville, do.; John A. C. Gray, N. York city; Col. R. B. Mason, Consulting Engineer.

Locomotive Manufacturing in the West.

We learn, with much pleasure, from the Detroit Tribune, that O. M. Hyde, Esq., has, in connection with other parties, completed arrangements for the erection of a large locomotive shop in Detroit. The buildings already built and contracted for, will extend above 700 feet in length, by 50 feet in width, and will all be of three stories. Five hundred men will be employed. These will be in connection with a large Foundry and rolling mill working only upon Lake Superior iron which is now acknowledged to be the best in the world. (For an inspection of the appearance of this iron after undergoing the severest tests we would recommend our local readers to call at the office of the Sharon Iron Company, 127 Pearl street, in this city.) We have no doubt, the business of manufacturing locomotives will be successfully carried on in Detroit.

Messrs. Palm and Robertson, of St. Louis, have already constructed the first locomotive west of

the Mississippi, and are now, we learn, filling a large order for the Pacific Railroad Co. The entire train of engine and cars run over the first division of the Pacific railroad at the celebration of its opening, was of St. Louis manufacture.

Buffalo, Brantford and Goderich Railroad.

By the recent report of this company we learn that the eastern division of the road—that portion between Buffalo and Brantford—is confidently expected to be open to the public by the first day of next October. The iron, says the report, is arriving in satisfactory quantities at Quebec, and is being forwarded with dispatch to the Welland Canal Feeder, from which point, with the aid of two locomotives, the permanent road is being laid, east and west. The financial affairs of the company too, are in a prosperous and healthy condition, and the debentures accepted in payment of shares held by the local municipalities along the line, to the amount of £184,500, have been cashed by the Provincial Government at par, under the consolidated Municipal Loan Fund Act for Upper Canada. The following is the exhibit:

STATEMENT OF FINANCES.

Of the Buffalo, Brantford and Goderich Railway Company, June 1, 1853.

To cash paid Masonry, Grading, etc.	\$129,357 54
" " Right of Way.....	23,484 89
" " Interest on Bonds, Discount, Brokerage, Agency, etc.....	60,956 32
" " Office expenses, Salaries, Printing, Advertising, etc.....	16,976 17
" " Engineering and surveying.....	28,915 46
" " Iron.....	361,111 11
" " Plank.....	1,800 00

To amount of municipal debentures negotiated with Provincial Government.....	738,000 00
To balance of cash on hand.....	108,820 96

\$1,469,422 45

By receipts for stock.....	\$913,556 55
" convertible bonds.....	555,555 55
" sundry balances due.....	310 35

\$1,469,422 45

The report of Mr. William Wallace, the Engineer of the road, accompanied the statement of the directors, and gives a very favorable account of the progress and prospects of the work. The following is his estimate for the Goderich extension—

Clearing, Grubbing and Grading, including all the necessary bridges and culverts, and also the ties, as per contract.....	\$550,000
Grading and Dockage at Goderich.....	15,000
Right of way and depot grounds.....	25,000
Fencing.....	35,000
Ballasting, cattle-guards, etc.....	60,000
Superstructure, laid in the usual manner, with the heavy rail, including all necessary turn-outs.....	650,000
Depot buildings at Goderich, and all necessary intermediate stations.....	55,000
Engineering and agencies.....	50,000

\$1,440,000

Eight Locomotives, fifteen first class passenger, four mail and baggage, one hundred freight, forty platform, forty gravel, and ten hand cars.....	\$235,000
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\$1,675,000

Maine.

York and Cumberland Railroad.—We have received the recent report of Chas. Q. Clapp, Esq., President of this road, from which we gather the following statement of its operations and prospects.

Freight trains commenced running between Portland and Saco river on Feb. 15th last, and passenger trains were run on the 20th of March following.

The equipment now consists of three locomotives, two passenger cars, eighteen freight and twenty dirt cars. One passenger car and ten freight cars in addition will be required during the summer.

The books show the cost of that part of the line constructed to be,

From Portland to Saco River.....\$643,109 52
" Spring Vale to Gt. Falls..... 70,489 99

Total.....\$713,605 51

And for which the company are now indebted as follows—

In Bonds.....\$341,100 00
Floating Debt..... 44,868 98

\$385,968 98

5,157 shares of stock have been issued at \$50.....\$257,859 00

332 shares have been sold at auction for..... 6,035 69

\$263,875 69

Received upon stock partially paid.. 21,871 26
Uncollected subscriptions..... 81,155 20

A large tract of land, for a freight station, has been secured in Portland.

An additional section of the road, from Saco river to Portland, is under contract.

The whole amount received in stock has been—\$285,747 05, and the sum of receipts, bonds and bills payable, and of expenditures, are respectively \$713,605 51. The receipts of the road for the year ending June 30th. 1853, were \$23,946 01, and the expenditures \$12,689 93, leaving \$11,256 08 as net earnings.

Marine Engine Building.

The following, showing the operations of some of our largest machine establishments, is from Appleton's Magazine for August.

Machine-shops every where appear filled with orders; in fact business is too good to make an exhibition of work in the Crystal Palace, as much an object as at ordinary times for American mechanics. Among the large jobs now contracting in this city, the Novelty Works have in hand one side-lever engine, 85 inch diameter of cylinder and 8 feet stroke (for a steamer to run between this port and Charleston); one 85 inch diameter 8 feet stroke, single oscillating engine (similar to the "Augusta," and to run with her between New-York and Savannah); one 38 inch, 11 feet, beam engine; one 36 inch, 8 feet inclined engine (Albany ferry-boat); a number of stationaries, one of which is 36 inch, 5 feet stroke, and a host of quartz-crushers, brick-machines, &c.

The Morgan works, near by, are building no less than 19 large low-pressure steam-engines, and give direct employment to about 713 hands. Two of these are 42 inches diameter and 10 feet stroke for the steamer Jamestown; six are 50 inch beam-engines for vessels being constructed for Messrs. Howland & Aspinwall; two 65 inch, by 10 feet, oscillating, for the steamer "San Francisco," two 65 inch, 10 feet stroke, for the U. S. M. steamer "George Law," one 80 inch, 12 feet stroke, for the "Lake Erie," one 88 inch, 12 feet, for the "Golden Age" (Howard and Son, Australia line);

one 80 inch cylinder, 6 feet stroke (an additional engine for the "San Francisco"); two 60 inch, 11 feet cylinders for the "Vera Cruz," one 44 inch, 9 feet, for the Chicago Water Works; and one 44 inch, 11 feet for some place on the river Danube, in Europe.

Cincinnati Wilmington and Zanesville Railroad.

Yesterday morning, the invited guests of the Cincinnati, Wilmington and Zanesville Railroad left this city for Wilmington to attend the celebration of the completion of the road to that place. A long train of nearly thirty cars carried an immense crowd over the road in first rate style, who were welcomed to Wilmington in a brief speech by Isaiah Morris, Esq. and by at least eight thousand persons from that and neighboring towns. A table, 1,200 feet in length was spread in a beautiful grove, adjacent to the railway, and covered with a profusion of excellent food. Six head of cattle, thirty sheep, and other provisions in proportion, had been prepared for the occasion, which speedily disappeared under the masticatory power of the hungry crowd. After Phelps' brass band had discovered some excellent pieces, speeches, appropriate to the occasion, were made by Judge McKay, of Wilmington, Dr. Griswold, of Circleville, one of the Directors of the road, Mr. DeGraff, the contractor, and other gentlemen.

The part of the road completed from Morrow to Wilmington appears to be very thoroughly built, and runs unusually smooth for a new road. The complete manner in which this important line has been constructed, is alike creditable to Mr. Corwin, the President of the road, and Mr. Woodward, its Engineer and Mr. DeGraff, the contractor. The entire road to Zanesville will be finished about the first of November, and will open under the most favorable circumstances for doing a large and profitable business.—*Cincinnati Atlas of the 6th.*

Safety Buffering Apparatus.

The value of any preventative of collisions, or of their destructive results, could not, under the present aspect of railway travelling, be over-estimated. It has been supposed a fruitless endeavor to lessen the effects of railway collisions except by removing their cause, but there are cases where, seemingly, in face of reasonable precautions, accidents have resulted from collisions. In view, therefore, of the evident chances of accident under anything like the present system of passenger transportation, it is well to inquire if the possible occurrence of such events should not be provided for, and, if there are not simple and effectual means of security ready for such provision, We believe there are.

In the first place, we believe the force of collisions is usually far too highly estimated. Many suppose that the force of a concussion is equal to the entire weight of a train multiplied into its velocity, as if the train were a body freely descending in air. Now we regard it, and engineers will see the manifest propriety of our estimation, that the force is equal to the impelling power of a train multiplied into the velocity under which that power is exerted. This impelling power is always measured by the adhesion of the engine, and this adhesion, being at most one seventh of the weight of the engine, we find the power of a concussion is expressed, in the case of a locomotive of say 21 tons weight, moving at 30 miles per hour, by the impact of three tons striking with a velocity of (30 miles per hour,) forty-four feet per second. This would give a result far below that if the weight of the train was improperly considered as an element of the force of concussion.

Having reduced this element to a reasonable limit, how can we overcome it? We believe equal

forces are overcome upon locomotive engines and carriages, by the aid of common springs, which, from their character and method of application, act under very disadvantageous circumstances. If the limit of action of a spring could be increased, and if it could be arranged to have a nearly constant resistance under any deflection; not acting from a minimum to a maximum range of resistance—from no resistance, to the resistance of an immovable obstacle, then we are of opinion that the force of concussion might be absorbed without danger.

It is not our purpose, however, to propose a plan. We have been shown an operating model of an invention of our friend, M. Butt Hewson, Esq., C. E., which appears to us to promise much in the way of security from the results of collisions. It is designed with reference to the principles we have stated, and will soon be applied upon an important scale, and be made the subject of conclusive experiments.

Large Drivers.

It may not be known to the majority of our readers, that there are a number of locomotives now running in this country having coupled drivers as large as seven feet in diameter. The "Columbia" and "Rensselaer," two locomotives on the Hudson River road, have drivers of this size. These are outside connected, 16½ inch cylinder, and 22 inch stroke engines, and were built by the Lowell-Machine Shop. On the New York and Erie railroad the two engines "No. 84" and "No. 85" have four coupled, seven feet drivers. These are 14 inch cylinder, 32 inch stroke engines, built at Norris'. They are but little used on the Erie road, and could hardly be driven, (from insufficient boiler room and disproportionate length of stroke,) over twenty miles per hour. The Reading road has 2 of Millholland's engines, with four 7 feet drivers each. These are the coal-burning engines "Illinois" and "Michigan," and have, we believe, 15 inch cylinders and 30 inch stroke. The Western railroad, of Mass., has one engine, built by Mr. Eddy, their master mechanic, which has four drivers of 6 ft. 10 inches in diameter. This is the "Whistler," with 15 inch cylinders and 26 inch stroke. On the Camden and Amboy road, many of the engines have single drivers of eight feet diameter, but extremely long stroke. The object, with builders in our country, in increasing the size of the driving wheels, has apparently been that of reducing the wear attendant upon quick reciprocations of the piston, for among the engines just quoted, the Erie engines make no faster time, under any given speed of piston per minute, than an engine with 4 feet 4 inch wheels and 20 inch stroke; Eddy's engine the same as a 5 feet 8 inch wheel and 20 inch stroke, while the "Rensselaer" and "Columbia" come much nearer to the standard proportions of quick express engines. In England, a 20 inch stroke is common for a 7 feet wheel, and 24 inches is generally adopted for an 8 feet wheel; equal to a 20 inch stroke for a six feet eight inch wheel.

The speed of the Hudson River engines is often a mile per minute on the straight parts of the road, and fifty miles per hour, as an average of the running time over the entire length of the road, the distance of one hundred and forty-four miles, having been often run in less than 3 hours, running time.

No engine having over 5 feet 6 inch drivers is used on any road running out of Boston.

American Railroad Journal.

Saturday, August 30, 1853.

Stock and Money Market.

There has been a gradual improvement in the money market since our last. The prices of stocks do not rule much higher, but the remedy for the inflation of the currency is being steadily applied, and cannot fail soon to bring about a healthy state of things. With weekly returns, the issues of our institutions will be regulated by the wants of business, rather than by the desire to make money by over-banking. It is something to correct abuses where they are seen, and the promptness with which they were acknowledged and met in the present case, shows the existence of a sound sentiment in the community, and the apparent ease with which the banks have strengthened their position, proves our business and mercantile classes to be in a healthy condition. The rapidity with which we commit mistakes is only equalled by the celerity with which we correct them. We may be depressed but never broken. We may be more likely to commit mistakes, but we retrieve them quicker than another people, for the reason that we have more inherent strength than any other.

The following are the comparative statements of the banks for the weeks ending Aug. 6, and 13:

	Aug. 6.	Aug. 13.	Decrease.
Loans.....	\$97,899,449	94,633,282	3,266,213
Specie.....	9,746,441	10,653,518	*907,177
Circulation....	9,513,053	9,451,943	61,110
Deposits.....	60,579,797	57,451,504	3,122,297

*Increase.

Some of the fancy stocks have shown a considerable improvement. Erie has advanced since our last from 69½ to 72; Hudson River from 67 to 68½; Harlem from 57½ to 58½. The market generally has an upward tendency. Money continues tight, but is steadily and slowly becoming easier, with the correction of the evils that created the present stringency.

So intimate now are the relations of commerce, that our country cannot enjoy the highest degree of prosperity, without a corresponding state with its neighbors. It is much better for the United States that there should be a good wheat crop than a bad one, in England, though we might supply the deficiency at good prices. The wheat grower might profit by such a state of things, but all our other interests would suffer in a much greater degree. A short crop in England is another word for a tight money market in Europe, and we now depend so much upon foreign capital to aid us in carrying out our works of public improvement, that any considerable abatement of the ordinary supply would be severely felt; not so much by our works that are completed, as by those just commenced or contemplated. The present unsettled state of the public mind in Europe, is consequently a general source of regret in the United States. We have no direct interest in the result of the quarrel now going on in the Old World, and it is the ambition of our own people to reduce an unoccupied continent into subjection to our physical wants, rather than to conquer civilized or inhabited ones. As the greater part of our people are landholders, and as every one may purchase a

Railway Share List,

Compiled from the latest returns—corrected every Wednesday—on a par valuation of \$100.

NAME OF COMPANY.	Miles open.	Capital paid in.	Funded debt.	Tot. cost of road and equip'm't.	Gross Earnings for last official year.	Net Earnings for last official yr.	Dividend for do.	Price of Shares.
Atlantic and St. Lawrence... Maine.	150	1,417,587	3,000,000	4,649,392	200,233	.....	none	100
Androscoggin and Kennebec.. "	55	809,878	1,016,500	2,064,458	140,561	80,053	none	36
Kennebec and Portland..... "	72	876,741	800,000	2,180,000	133,338	.....	none	45
Port., Saco and Portsmouth.. "	51	1,355,500	123,884	1,459,384	208,669	.....	6	100
York and Cumberland..... "	20	227,981	291,200	In progres	15,694	.....	none	40
Boston, Concord and Montreal. N. H.	93	1,649,278	622,200	2,540,217	150,538	79,659	none	41
Concord	35	1,485,000	none.	1,485,000	305,805	141,836	8	109
Cheshire	54	2,078,625	720,900	3,002,094	287,768	55,266	5	47
Northern	82	3,016,634	.....	.....	328,782	163,075	5	59
Manchester and Lawrence.... "	24	717,543	.....	.....	.....	.....	6½	96½
Nashua and Lowell..... "	15	600,000	none.	651,214	132,545	51,513	8	109
Portsmouth and Concord.... "	47	.....	.....	1,400,000	.....	.....	none	.....
Sullivan	26	.....	.....	673,500	.....	.....	none	14
Connecticut and Passumpsic.. Vt.	61	1,097,600	550,000	1,745,516	.....	.....	none	41
Rutland	120	2,486,000	2,429,100	5,577,467	495,397	266,589	none	30
Vermont Central..... "	117	8,500,000	3,500,000	12,000,000	.....	.....	.....	16
Vermont and Canada..... "	47	1,500,000	.....	1,500,000	Leased to the Vt. C.	.....	cent.	102
Western Vermont..... "	51	392,000	700,000	.....	Recently opened.	.....	none	.....
Vermont Valley	24	.....	.....	.....	.....	.....	none	.....
Boston and Lowell..... Mass.	28	1,830,000	.....	1,995,249	388,108	130,881	7½	99
Boston and Maine..... "	83	4,076,974	150,000	4,092,927	659,001	338,215	7	106
Boston and Providence..... "	53	3,160,390	390,000	3,546,214	469,656	227,434	6	87½
Boston and Worcester..... "	69	4,500,000	425,000	4,845,967	758,819	331,296	7	101
Cape Cod branch..... "	28	421,295	171,800	633,906	60,743	30,056	2½	40
Connecticut River..... "	52	1,591,100	193,500	1,801,946	229,004	72,028	5	55
Eastern	75	2,850,000	500,000	3,120,391	488,793	241,017	7½	92
Fall River	42	1,050,000	none.	1,050,000	229,445	99,589	8	105
Fitchburg	66	3,540,000	112,305	3,623,073	574,574	232,787	6	99½
New Bedford and Taunton... "	20	500,000	none.	520,475	164,230	43,950	7½	117
Norfolk County..... "	26	547,015	819,743	1,245,927	67,251	23,415	none	62
Old Colony..... "	45	1,964,070	282,300	2,293,534	322,213	101,510	none	92
Taunton Branch..... "	12	250,000	none.	307,136	137,406	24,399	8	.....
Vermont and Massachusetts.. "	77	2,140,536	1,001,500	3,203,333	18,648	18,648	none	18
Worcester and Nashua..... "	45	1,134,000	171,210	1,321,945	162,109	66,900	4½	59½
Western	155	5,150,000	5,319,520	9,953,759	1,339,873	683,194	6½	99½
Stonington..... R. I.	50	.....	.....	.....	.....	.....	.....	57½
Providence and Worcester... "	40	1,457,500	300,000	1,731,498	253,690	139,514	6	.....
Canal..... Conn.	45	.....	.....	.....	.....	.....	10	.....
Hartford and New Haven.... "	62	3,000,000	472,000	.....	600,408	332,223	none	125
Housatonic..... "	110	.....	.....	2,500,000	329,041	168,902	none	.....
Hartford, Prov. and Fishkill.. "	50	.....	.....	In progres	69,629	.....	none	.....
New London, Wil. and Palmer "	66	558,861	800,000	1,511,111	114,410	.....	.....	.....
New York and New Haven... "	61	3,000,000	1,641,000	4,978,487	806,713	428,173	7	104
Naugatuck	62	926,000	440,000	.....	.....	.....	.....	.....
New London and New Haven. "	55	750,500	650,000	1,380,610	Recently opened.	.....	none	45
Norwich and Worcester..... "	54	2,121,110	701,600	2,596,488	267,561	116,965	4½	52½
Buffalo and New York City.. N. Y.	91	900,000	1,550,000	2,550,500	Recently opened.	.....	none	65
Buffalo, Corning and N. York. "	132	.....	.....	In progres	.....	.....	none	.....
Buffalo and State Line..... "	69	879,636	872,000	1,921,270	Recently opened.	.....	.....	130
Canandaigua and Niagara F.. "	50	.....	.....	In progres	.....	.....	.....	.....
Canandaigua and Elmira..... "	47	425,509	582,400	987,627	76,760	39,360	none	68
Cayuga and Susquehanna.... "	35	687,000	400,000	1,070,786	74,241	23,496	none	.....
Erie, (New York and Erie)... "	464	9,612,995	24,003,865	31,301,806	3,537,766	1,691,623	7	62½
Hudson River..... "	144	3,740,515	7,046,395	10,527,654	1,063,659	338,783	none	68½
Harlem	130	4,725,250	977,463	6,102,935	681,445	324,494	5	58½
Long Island..... "	95	1,875,148	516,246	2,446,391	205,068	44,070	none	31½
New York Central..... "	504	22,858,600	2,111,824	.....	.....	.....	.....	113½
Ogdensburg (Northern)..... "	118	1,579,969	2,969,760	5,133,834	480,137	195,847	none	34½
Oswego and Syracuse..... "	35	350,000	201,500	607,803	90,616	43,609	4	70
Plattsburg and Montreal.... "	23	174,042	131,000	349,775	Recently opened.	.....	none	.....
Rensselaer and Saratoga.... "	25	610,000	25,000	774,495	213,078	96,737	.....	.....
Rutland and Washington.... "	60	850,000	400,000	1,250,000	Recently opened.	.....	.....	.....
Saratoga and Washington.... "	41	899,800	940,000	1,832,945	173,645	135,017	none	30
Troy and Rutland..... "	32	237,690	100,000	329,577	Recently opened.	.....	.....	33
Troy and Boston..... "	39	430,936	700,000	1,043,357	Recently opened.	.....	none	.....
Watertown and Rome..... "	96	1,011,940	650,000	1,693,711	225,152	116,706	8	109
Camden and Amboy..... N. J.	65	1,600,000	.....	4,327,492	1,388,385	478,413	10	150
Morris and Essex..... "	45	1,022,420	128,000	1,220,325	149,941	79,252	4	.....
New Jersey..... "	31	2,197,840	476,000	3,245,720	603,942	316,259	10	148
New Jersey Central..... "	63	986,106	1,500,000	2,379,880	260,899	124,740	3½	.....
Cumberland Valley..... Penn.	56	1,184,500	13,000	1,265,143	118,617	76,890	5	.....
Erie and North East..... "	20	600,000	.....	750,000	Recently opened.	.....	.....	125
Harrisburgh and Lancaster.. "	38	783,950	688,051	1,609,494	200,249	106,932	8	.....
Philadelphia and Reading.... "	95	6,656,332	10,427,800	17,141,987	2,480,626	1,251,987	7	82½
Philad., Wilmington and Balt. "	98	3,850,000	2,403,276	6,813,336	667,785	388,501	5	7

Railway Share List,

Compiled from the latest returns—corrected every Wednesday—on a par valuation of \$100.

NAME OF COMPANY.	Miles open.	Capital paid in.	Funded debt.	Tot. cost of road and equipm't.	Gross Earnings for last official year.	Net earnings for last official yr.	Dividend for do.	Price of shares.
Pennsylvania Central..... Penn.	250	9,768,155	5,000,000	13,600,000	1,943,827	617,625	....	99½
Philadelphia and Trenton.... "	30	.....	.....	.....	.....	.....	.....	.....
Pennsylvania Coal Co..... "	47	.....	.....	.....	.....	.....	.....	.....
Baltimore and Ohio..... Md.	381	9,188,300	9,827,123	19,542,307	1,325,563	615,384	7	64
Washington branch..... "	38	1,650,000	.....	1,650,000	348,622	216,237	8	....
Baltimore and Susquehanna.... "	57	.....	.....	.....	413,673	152,536	.....	.....
Alexandria and Orange..... Va.	65	.....	.....	In prog.	.....	.....	.....	.....
Manassas Gap..... "	27	.....	.....	In prog.	.....	.....	.....	.....
Petersburgh..... "	64	.....	.....	.....	.....	.....	.....	.....
Richmond and Danville..... "	73	1,372,324	200,000	In prog.	.....	.....	.....	.....
Richmond and Petersburg.... "	22	685,000	.....	1,100,000	122,861	74,113	none	.....
Rich., Fred. and Potomac.... "	76	1,000,000	503,006	1,531,238	254,376	113,256	7	105
South Side..... "	62	1,328,722	800,000	In prog.	.....	.....	.....	.....
Virginia Central..... "	107	1,400,100	446,036	In prog.	176,485	74,902	none	.....
Virginia and Tennessee..... "	60	3,000,000	1,500,000	In prog.	.....	.....	none	.....
Winchester and Potomac.... "	32	180,000	120,000	416,532	89,776	.....	12	.....
Wilmington and Raleigh..... N. C.	161	1,338,878	1,134,698	2,965,574	510,038	153,898	6	.....
Charlotte and South Carolina. S. C.	110	.....	.....	.....	.....	.....	.....	.....
Greenville and Columbia.... "	140	1,004,231	300,000	In prog.	.....	.....	.....	.....
South Carolina..... "	242	3,858,840	3,000,000	7,002,396	1,000,717	609,711	7	125
Wilmington and Manchester. Ga.	191	3,100,000	306,187	3,378,132	945,508	508,625	8	122
Georgia Central..... "	211	4,000,000	1,214	.....	934,424	456,468	7½	.....
Georgia..... "	101	1,214,283	168,000	1,506,283	496,584	153,697	9	109
Macon and Western..... "	71	.....	.....	In prog.	.....	.....	.....	.....
Muscogee..... "	50	586,887	150,000	743,525	129,395	71,535	8	.....
South Western..... Ala.	55	.....	.....	In prog.	.....	.....	.....	.....
Alabama and Tennessee River. Ala.	93	776,259	400,000	In prog.	.....	.....	.....	.....
Memphis and Charleston.... "	33	879,868	.....	In prog.	.....	.....	.....	.....
Mobile and Ohio..... "	88	688,611	.....	1,380,960	173,542	76,079	8	.....
Montgomery and West Point. Miss.	60	.....	.....	.....	.....	.....	.....	.....
Southern..... Tenn.	80	835,000	541,000	In prog.	.....	.....	.....	.....
East Tennessee and Georgia. Tenn.	125	2,093,814	850,000	In prog.	.....	.....	.....	.....
Nashville and Chattanooga. Ky.	29	1,430,150	1,100,000	In prog.	.....	.....	.....	.....
Covington and Lexington.... "	65	357,218	.....	584,902	87,421	44,250	.....	80
Frankfort and Lexington.... "	.....	.....	.....	.....	.....	.....	.....	.....
Louisville and Frankfort.... "	.....	.....	.....	.....	.....	.....	.....	.....
Maysville and Lexington.... "	.....	.....	.....	In prog.	.....	.....	.....	.....
Cleveland and Pittsburgh.... Ohio.	100	1,239,450	1,371,000	2,963,756	194,429	123,306	6	96
Cleveland, Painesv. and Ash. "	71	.....	.....	.....	.....	.....	.....	.....
Cleveland and Columbus.... "	135	3,027,000	408,200	3,655,000	777,798	483,454	12	132
Columbus, Piqua and Indiana. "	61	.....	.....	In prog.	.....	.....	.....	.....
Columbus and Lake Erie.... "	60	1,694,000	906,000	2,600,000	321,793	200,967	.....	115
Cincinnati, Ham. and Dayton. "	40	310,000	550,000	925,000	.....	.....	.....	80
Cincinnati and Marietta.... "	20	.....	.....	In prog.	.....	.....	.....	.....
Dayton and Western..... "	36	.....	.....	.....	.....	.....	.....	70
Dayton and Michigan..... "	31	.....	.....	.....	.....	.....	.....	.....
Eaton and Hamilton..... "	37	.....	.....	In prog.	.....	.....	.....	.....
Greenville and Miami..... "	84	2,370,784	.....	2,634,157	526,746	314,670	10	119½
Hillsboro..... "	.....	.....	.....	.....	.....	.....	.....	.....
Little Miami..... "	167	900,000	1,000,000	1,855,000	.....	.....	.....	.....
Mansfield and Sandusky.... "	.....	2,387,200	1,767,000	4,110,148	540,518	113,401	.....	95
Mad River and Lake Erie.... "	57	.....	.....	In prog.	.....	.....	.....	.....
Ohio Central..... "	187	1,750,700	2,450,000	.....	.....	.....	.....	95
Ohio and Mississippi..... "	.....	.....	.....	.....	.....	.....	.....	.....
Ohio and Pennsylvania..... "	.....	.....	.....	In prog.	.....	.....	.....	.....
Ohio and Indiana..... "	87	552,000	800,000	1,317,140	.....	.....	.....	.....
Scioto and Hocking Valley... "	54	1,092,137	119,500	1,257,714	237,506	135,363	15	.....
Toledo, Norwalk and Cleve'd. "	31	.....	.....	In prog.	.....	.....	.....	.....
Xenia and Columbus..... Ind.	131	.....	.....	.....	.....	.....	.....	.....
Evansville and Illinois..... "	83	.....	.....	.....	.....	.....	.....	.....
Indiana Central..... "	.....	.....	.....	.....	.....	.....	.....	.....
Indiana Northern..... "	62	.....	.....	In prog.	.....	.....	.....	.....
Indianapolis and Bellefontaine. "	88	1,650,000	750,000	2,400,000	516,414	268,075	10	85
Lawrenceburg and Ind..... "	40	.....	.....	In prog.	.....	.....	.....	.....
Lafayette and Indianapolis.... "	72	632,387	663,100	1,353,019	105,944	71,446	4	108
Madison and Indianapolis.... "	.....	.....	.....	.....	.....	.....	.....	.....
Peru and Indianapolis..... "	.....	.....	.....	.....	.....	.....	.....	.....
Terre Haute and Indianapolis. Ill.	92	1,932,361	500,000	In prog.	473,548	286,152	.....	136
Rock Island and Chicago.... "	815	2,499,410	2,629,000	6,430,246	592,187	293,046	.....	124
Chicago and Mississippi.... "	282	4,000,000	4,067,396	8,614,193	.....	.....	8	109
Illinois Central..... Mo.	.....	.....	.....	.....	.....	.....	.....	.....
Galena and Chicago..... "	.....	.....	.....	.....	.....	.....	.....	.....
Michigan Southern..... "	.....	.....	.....	.....	.....	.....	.....	.....
Michigan Central..... "	.....	.....	.....	.....	.....	.....	.....	.....
Pacific..... "	.....	.....	.....	.....	.....	.....	.....	.....

hundred acres of land for as many dollars, nearly every person in the community feels a desire for that state of things that shall promote in the highest degree the value of what he possesses. This feeling is the great conservative principle in the United States, and makes our government stronger, and the present status of society more stable, than in any country in the Old World. This fact is beginning to be realized both in this country and in Europe, and we entertain no doubt that capital will continue to flow hither in an increased volume,—the greater the prosperity in the Old World. The imports for August look better than for previous months, which showed a very large increase over those of 1852. The imports for the week ending August 13, were as follows:

	1852.	1853.	Dec're'se.
Dry Goods.....	\$2,044,948	2,036,665	8,283
Other Goods.....	2,364,519	1,416,582	947,937
Total imports....	\$4,409,467	3,453,247	956,220
Total exports....	571,797	1,047,582	.....
Total specie.....	800,000	333,709	.....

For the two weeks in August the figures are as follows, August 1st to 13th.

Imports.....	\$7,358,098	6,840,891	517,207
Exports produce....	1,380,084	2,387,938	.....
Exports specie....	1,720,232	338,939	881,293

The decrease in imports is over half a million, and the increase in exports of produce over \$1,000,000, as compared with the corresponding period of last year.

Should a good demand spring up for our agricultural products, it would increase our exports very largely. The wheat has proved a good average crop for the whole country, and has been well secured. Other grain crops are looking well.

The increased value of the article of railroad iron continues to swell the value of our imports considerably. The following statement will show the amount and value of importation into the port of New York, since July 1, 1853, as compared with the importations for the past year:

	1852.		1853.	
	Bars.	Value.	Bars.	Value.
1st quar..	126,792	\$457,111	124,682	\$909,943
2nd. do ..	76,569	311,146	234,288	1,780,575
To Aug. 13	85,960	366,029	74,162	565,461
Total.....	289,321	\$1,134,286	433,132	\$3,255,979
			289,321	\$1,134,286

Increase..... 143,811 \$2,121,693

The earnings of the Cincinnati, Hamilton and Dayton R. R. Co. for six months ending July, were as follows:

	1852.	1853.
February.....	\$14,270 50	\$27,389 76
March.....	19,067 29	35,364 68
April.....	20,481 28	36,051 83
May.....	22,701 15	35,061 10
June.....	24,096 15	32,302 93
July.....	26,301 15	34,203 47

\$126,917 52 \$200,373 77

Increase \$73,456 25, nearly 58 per cent.

The earnings of the Ogdensburg R. R. for July were—through freight, \$24,889.08; local freight \$15,425.26; passengers \$13,078.68; miscellaneous \$211.67—\$53,604.64. Increase over July 1851, \$24,152.70; increase over July 1852, \$3,869 28.

The earnings of the Pennsylvania Cent. road for July, were \$157,244, against \$112,879 same month last year.

The revenue of the Baltimore and Ohio Railroad for the month of July has been as follows:

	Main Stem Wash'ton Br'h.	Total
For Passengers...	\$42,818 70	\$21,874 66
For Freight.	121,826 72	5,296 10
		157,122 91

Total...\$164,140 42 \$27,170 85 \$191,311 27

As compared with the receipts of July, 1852, the increase of revenue of the road is \$55,723 66. The whole of this increase is derived from the business of the main stem, the receipts of the Washington branch in July of '52 exceeding by \$1,494 82 those of the past month and thus making the total increase of receipts from the main stem \$57,218 46. The receipts of July, 1852, were as follows: On the main stem \$28,205 20 for passengers, and \$78,716 86 for freight making \$106,922 06; and on the Washington branch \$24,516 77 for passenger, and \$4,148 60 for freight—making \$28,665 67. The gross receipts \$135,587 63.

Baltimore and Ohio Passenger Engines.

The late passenger engines constructed by Mr. S. J. Hayes, master machinist of this road, have the following arrangement and dimensions:

Inside connected; four drivers and truck; adapted to burn coke; have full stroke pumps; center bearing trucks, lap valves, etc.

15 inch cylinder, 20 inch stroke, 5 feet drivers. Diameter of boiler 48 inches, and contains 151 tubes, 2 inches diameter and 9 feet 3 inches long. Grate 48 inches long by 42 inches wide, giving 14 square feet of surface. This extreme width of grate is had without any reduction of the width of the water spaces around the furnace, there being 2½ inches on each side. The frame is quite deep and thin, and there is but a single spring on each side, which is suspended upon the furnace, the thickness of iron being doubled where the spring is attached.

The steam ports are 12 inches by 1 inch. The exhaust pipes 2½ inch diameter each. The weight of the whole engine is 45,000 lbs., of which 29,000 lbs. are on the drivers.

These engines are very strongly built, and have been tested and found to take eight passenger cars, of eight wheels each, and one eight wheel baggage car, up an eighty feet grade at 20 miles per hour. This is an extremely good performance, but is not beyond what an engine of the dimensions specified should do, if in the best order, and operated under favorable circumstances.

A Subject for Steamboat Inspectors.

Riding down from Piermont the other day in the steamboat "Isaac P. Smith" we noticed a little specimen of carelessness deserving the censure of every passenger. The safety valve lever, upon which is a strain of 1200 lbs. at the fulcrum, is secured by a stand, which is held to the flange of the safety valve seat by two bolts, each half an inch in diameter at the bottom of the thread, and passing through but little more than half of the thickness of their nuts, the latter being each half an inch in thickness. The pins also which pass through the lever to secure the valve spindle, has no wires or nuts to hold it and is quite free to become knocked out of place. The steam pipe and safety valve stand look worn and deeply rusted. The life preservers are snugly stowed away over the boiler, in just the least accessible place in case of fire, explosion or collision.

As much indignation is usually shown after the occurrence of accidents, upon steamboats or railroads, we would express a gentle admonition before the possible occurrence of what may prove a serious accident.

New Orleans, Opelousas and Gt. Western Railroad.

We learn that the directors of this road have contracted with Messrs. Hacker & Riker, of Charleston, S. C., to supply all the cast iron work, cars, both passenger and freight, that may be required upon the road. In consequence of this contract, Messrs. Hacker & Riker will erect a branch of their establishment at Algiers, opposite N. O., to be near at hand.

The iron has already been laid some fifteen miles upon this road, and it is expected that ere long the laying of the rails will be prosecuted at the rate of seven miles per month. The road is very favorable for construction, the grade in some two hundred miles not reaching five feet.

Richmond and Petersburg Railroad.

The Richmond Times, says. "We are gratified to learn that the Board of Directors of this company held a meeting yesterday and resolved to contract with Joseph R. Anderson, Esq., for eleven hundred tons of T rails in addition to six hundred tons contracted for at their last meeting—making in all, seventeen hundred tons to be furnished by the Tredegar Works of this city. This is in addition to three hundred and twenty-seven tons of English rails already purchased—making two thousand and twenty-seven tons in all—a quantity sufficient to relay the main track between Richmond and Petersburg, and also the port Walthall Branch Road. The work of laying down this superior rail will be commenced at once, and when completed will render this road one of the best in the country.

We are also gratified to learn that Mr. Thomas Dodamead, the excellent and faithful Superintendent of the road, has been induced to reconsider his determination to sever his connection with it, and will continue in the service of the company. He had been, as has been already stated, selected by the Board of Directors of the Richmond and Danville Railroad Company, to succeed Mr. Osborne as Superintendent of Transportation on that road, but has declined the post."

Balancing Locomotive Drivers.

FROM D. K. CLARK'S RAILWAY MACHINERY.

(Continued from page 524.)

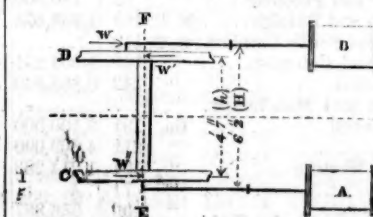
INTERNAL DISTURBING FORCES — METHOD OF BALANCING BY COUNTERWEIGHTS.

From what has been stated, the longitudinal and lateral, or horizontal action of the internal forces, are those alone which materially affect the stability of the engine, and it is to the correct balancing of these forces that we have now to direct attention. The action of the reciprocating masses was found to be identical with the horizontal action of the revolving masses, wanting the vertical action of the latter; therefore happily, the same means may be employed to balancing the whole revolving and reciprocating weights,—namely, Fernihough's method of counterweights attached to the wheel, and opposed to the cranks, and weighty enough to balance not merely the crank, pin, and one half the connecting rod, but also the other half with the piston and appendages. That part of the counterweight which balances the piston, develops of course, a superfluous vertical action in virtue of its centrifugal force; but vertical action, we have seen, harmless to the stability.

Were the balance to be applied at the same part of the axle as the center of the crank-pin and cylinder, the same counterweight would exactly destroy both the erratic movements, longitudinally and laterally, caused by the mechanism. In practice, however, while the weight works in the center line of the cylinder, the counterweight is for convenience, applied to the wheel, between the spokes; and as sinuous motion is caused by and increases with the leverage of the swinging masses, which is measured by the distance of their line of action from the middle of the axle, it follows that, to have perfect equilibrium laterally, the counterweight for outside cylinders must be greater, and for inside cylinders less than the moving weights referred to the crank-pin. Whereas, to neutralise exactly the longitudinal action, which is independent of leverage, an equal counterweight, referred to the crank-pin, must be applied in all cases. It will be shown that some latitude may be admitted in practice, for the mutual adjustment of these claims, after investigating the conditions of lateral equilibrium for different classes of engines.

Conditions of Lateral Equilibrium in Outside-Cylinder Single Engines.—Let A, B, fig. 12, be

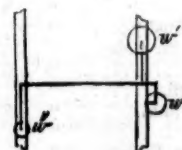
Fig. 12.—Scale 1-96th.



Outside Cylinders.—Diagram to show the Action of the Internal Disturbing Forces.

the cylinder of our sample engine, fig. 1, C, D, the wheels, and E, F, the centre line of the axle; let w be the weight of the piston and appendages, connecting rod, and half the crank-pin, which act in the centre line of the cylinder C ; and v the weight of the inner half of crank-pin, and the crank referred to the pin, acting in the body of the wheel D . Then, w , overhanging the wheel D , acts partly on the wheel C , and for perfect balance, must be met by suitable counterweights, w' , w'' , on opposite sides of the two wheels as illustrated in fig. 13. The arrows w , w' , w'' , fig. 12, show the action of the axle in resisting the three centrifugal forces developed by the counterweights in motion, and which also balance at all speeds. The counterweight w' , fig. 13 referred to the crank-pin, is greater than the weight w , by as much as w'' , referred to the crank-pin; that is

Fig. 13.



Outside Cylinders.—Internal Disturbing Forces and Counterweights.

$$w' = w + w'', \text{ and therefore } w'' = w' - w.$$

Also, the product of the weight w' , by its distance along the axle line from w , is equal to that of w'' into its distance from w ; or putting the width a part of the cylinder centres = h , and that of the wheel centres = k , we have

$$\frac{1}{2} (h+k) w' = \frac{1}{2} (h-k) w$$

doubling both sides, and putting for w'' its value as above, we have

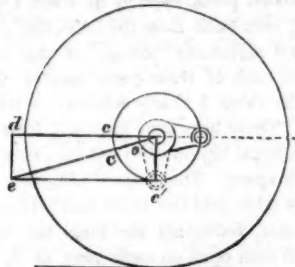
$$(h+k) (w' - w) = (h-k) w;$$

therefore

$$w' = \frac{h+k}{2k} w, \text{ and } w'' = \frac{h-k}{2k} w;$$

that is, the weight w' , referred to the crank pin, is

Fig. 14.



When public opinion, aided by the weak verdicts of a coroner's jury (appreciating only indirect causes) shall freely absolve the great monopoly from the responsibility of a double track between the two greatest cities in the western hemisphere, communicating in ninety miles with a local population of upwards of one million of inhabitants; when the same company are told indirectly that signals and telegraphs are no means of safety, but that the whole cause of the death of some half dozen beings, "was owing to conductor Somebody's watch being twenty minutes slow,"—can we then wonder at the appalling frequency of accidents?

North Carolina.

There are in North Carolina, about 400 miles of railroad, made as follows:

The Wilmington and Raleigh, 162 miles, the Raleigh and Gaston, 84 miles, and the portion of the Wilmington and Manchester lying within the State, over 60 miles—being, of themselves, over 300 miles in operation. Besides these, there are the roads connecting Gaston with Weldon, and with the junction on the Petersburg road—amounting to about 30 miles—and the portions of the Portsmouth and Roanoke, the Petersburg and Roanoke, and the Charlotte and South Carolina, which fully bring up the miles of roads in operation within the State to the figure named. The number of miles in course of construction, or proposed to be made, also exceed the 500 miles given—220 miles of the Central far advanced to completion, and of which between 50 and 60 will be finished by April next—the laying of the iron having been commenced,—its proposed extension east to Beaufort, and west to the Tennessee line, the surveys for which were authorized by the Legislature, which will considerably exceed three hundred miles; and the Fayetteville and Western railroad—for which the stock is all taken—and which, with its branches, or extensions, will certainly go over 50 miles—making, in all, much nearer seven hundred than five hundred miles.

When these facts are taken into consideration with the large amount of plank roads made and being made, it will be seen that North Carolina is far from being so backward in the race of improvement as is generally supposed. The single town of Fayetteville has more miles of plank road connected with her, than almost any other State in the Union can boast.

Kenosha and Beloit Railroad.

We have a copy of the report recently made by Alex. C. Twining Esq., Chief Engineer of this road, containing reports of the surveys made for its location. Of the three routes surveyed the shortest and most favorable is 46.57 miles in length, has 1218.50 feet of total ascent and descent, a total curvature of 633°, of which 5.55 miles are of 1° curves, and 3.22 miles of 2°, leaving 37.8 miles of straight line. The estimate for grading, masonry, bridging and ballasting for this route is \$288,171 43 or \$5,956 07 per mile, while the entire cost of road equipment, and stations is put down at \$1,057,131 88.

The distance by this route from Kenosha harbor to the Southern Wisconsin Railroad at Janesville is 68.12 miles.

Wisconsin.

Mineral Point Railroad.—From the recent report of this company we learn the length of the road under contract, from Mineral Point through Darlington and Gratoit to the connection with the Illinois Central Railroad is 31.7 miles. Under present contracts and estimates the road will cost, completely equipped, \$522,568. The shortest curves will have 1146 feet radius, the heaviest grades will be 53 feet per mile.

The means for the construction of the road are, in Stock subscriptions.....\$135,800
Iowa County Bonds.....150,000
First Mortgage bonds on whole road and equipments, \$10,000 per mile.....317,000

\$602,800

Railroad Items.

At a meeting of the Directors of the Whitehall and Plattsburgh Railroad, recently held at Troy the report of the engineer was read. The cost of the road is estimated at two and a half millions of dollars. The Port Kent route was reported as two miles less in distance, and 16 feet more favorable grade than the Keeseville route. Messrs. Schuyler of New York, Ferriers of Montreal, Myers of Plattsburgh, Richards of Troy, Hammond of Crown Point, and Green of Keeseville, were appointed to examine and report on this question. The Committee will meet at Keeseville in two or three weeks.

The Terre Haute and Alton Railroad Company have just put forth their Annual Report, in pamphlet form. Six members of the Board are of the State of New-York—Messrs. E. C. and E. B. Litchfield, John B. Jervis, F. C. Durant, John Stryker and Henry Ten Eyck. The line of the Road is 170 miles. The whole cost estimated at \$4,025,000. Two sections, amounting together to 98 miles are stated to be nearly completed. They have cost in construction and for iron \$1,788,549. The further sum of \$390,000 will open them. The first section, 60 miles, is a highly important one, opening an immediate Railway junction with the Chicago branch of the Illinois Central; the other section, 38 miles, is from Alton to Hardinsburg.

The work on the line of the Cleveland and Pittsburgh railroad, from Wellsville to Rochester, was let to contractors on Tuesday last, who will commence the work without delay. It is expected that the cars will be running from Pittsburgh to Wellsville, Steubenville and Bridgeport within the year.

The Oakland and Ottawa railroad company of Michigan have closed contracts with English parties for 9,000 tons of railroad iron. It is to be delivered in New York, 3,000 tons on the first of October next, and 600 tons on the first of each succeeding month until the whole of the contract is fulfilled.

Indiana and Illinois Central Railroad.

We are informed that a contract, which is regarded by the parties interested, as highly favorable, has recently been negotiated by Judge Rouche, the newly elected President of the company, for the construction of this road. We are highly gratified in being able to announce that another link in the great chain between the Atlantic and the Far-Far West, is thus placed beyond a doubt. This road connects on the West, at Decatur Illinois, with a series of roads, now under construction, and extending continuously to St. Joseph on the Missouri River. Between St. Joseph and Indianapolis, where this long line, connects with the great system extending to all the Atlantic Cities, lie the most fertile regions of the west, abounding in Coal and Iron. Where the road crosses the Wabash, at Montezuma, coal and iron of the first quality are said to be found in the greatest abundance and of easy access. Between that point and Decatur, 84 miles, the Western terminus of this road, neither coal or iron has been found, it being for four fifths of the distance an unbroken Prairie, almost in a state of nature.

We are informed, that the Board of Directors have with entire unanimity ratified the contract negotiated by Judge Rouche, and that vigorous measures were at once set on foot to secure the amount of stock necessary to build the road.

It is understood that the work on the road will be commenced during the ensuing fall, and that the road is to be completed by the first day of December 1855.

Hawkeworth's Valve.

Many recent English engines have been arranged to have a double exhaust port to each cylinder, and have the valve so adapted thereto as to commence the exhaustion of the steam, in each, at the same instant. At Paterson, several engines have been built with this alteration. At Manchester, N. H., also, the "double exhaust" has been introduced. Its object is a quicker exhaust, as the motion of the same valve opens two ports, in the same time as it would otherwise open one. The valve we saw on one of the Amoskeag Company's engines had the same width of "throat" or cavity as the distance between insides of induction ports, viz: 6 inches. Upon the cylinder face there were two exhaust ports, each $\frac{3}{4}$ in. wide, $1\frac{1}{2}$ in. apart, and $1\frac{1}{2}$ inch each from the induction ports. Bars were cast across the "throat" of the valve, so as to cover each of these ports during the period while the valve is nearly midway of its stroke, or travel. These bars were each $1\frac{1}{4}$ inch wide, and to have equal lap on each exhaust were, of course, one inch apart. The main or induction ports were one inch wide, and the valve had 7-16 inch outside lap, so that, deducting the inner lap, the exhaust was 3-16 inch open on each port, or $\frac{3}{8}$ inch open in all, at the commencement of the steam admission.

As this arrangement involves but a slight extra expense in fitting the valve faces, and must, to a certain extent, reduce the back pressure in the cylinder, we consider it an improvement worthy of general introduction. At Paterson it has been generally applied in most of the quick passenger engines.

Peoria and Bureau Valley Railroad.

We learn from the *Peoria Press* that final and satisfactory arrangements have been made for the early completion of this important road. Messrs. Sheffield, Farnham & Co. recently entered into contract with the company for the construction and equipment of the entire road, upon the terms and conditions before submitted. The work will be commenced at an early day; and from the well known energy and perseverance of the contractors, we think that we are safe in saying, that by the opening of navigation next season Peoria will have a railroad connection with Chicago.

William Jervis, Esq., has been appointed chief engineer of the road; and Azariah C. Flagg, Esq., of New York, formerly comptroller of that State, has been appointed Trustee for the bond-holders.

White's Suspension Bridge

We would call the attention of railroad engineers and others interested in the construction of Bridges to the principle of White's Suspension Bridge of wood or iron. Its application in the case of wide spans promises much economy of material and consequent reduction of cost. It combines the chain and the arch, besides the application of the level truss. The inventors and proprietors are ready to apply it to any reasonable span and guarantee its success, and will most willingly furnish full information, including estimates of its capacity and cost, on application to their address. We believe the design of their bridge contains a principle which may be applied to wooden or iron structures, and with satisfactory results. Ammi White and Joshua P.

Thayer, Cambridgeport, Mass., are the proprietors, to whom all communications on the subject should be addressed.

New Screw Cutter.

The screw cutting machine, which we noticed in a recent number as having been designed by D. M. Robinson, of Piermont, N. Y., has been completed and operated. The jaws holding the dies are compressed around the bolt to be cut, by a sliding cone, worked by a simple cam on a cross shaft, passing through the bed piece. The dies revolve always one way, and complete their work at one operation, four dies being used together.—The point of each die acts on a true tangent to any radius of the bolt. The machine we saw in operation would cut from $\frac{1}{8}$ to 1 inch in diameter and would cost, fitted with back gears and three cone speeds, about \$125, exclusive of dies and taps. As this appears to be a novel and useful machine, we would recommend machine builders to examine it, with a view of engaging in its manufacture, under the direction of the inventor. Mr. Robinson has also designed and completed a substantial and handsome punching press, worked by an eccentric and eccentric link. A novel application of it has been made to punching the leather washers used in the Lightner axle box. One thousand of these leathers are used per month at the Piermont shops, and they are now cut by this machine as fast as they can be laid under the die, and with a saving of half the leather otherwise used. We would like to see both of Mr. Robinson's machines at the Crystal Palace.

Knoxville and Charleston Railroad Company Organized.

The Memphis Eagle and Enquirer says: A sufficient amount of capital stock having been subscribed the company was organized under the direction of the Commissioners, at Knoxville, on the 28th of June by the election of the following gentlemen as directors:

Blount.—Wm. Wallace, Asa Watson, R. I. Wilson, J. E. Toole, James Porter, Samuel Pride, Alex. Kennedy.

Knox.—C. H. Coffin, J. A. Mabry, J. G. M. Ramsey, C. Wallace, C. M. McGhee, James C. Moses, D. H. Cummings, Wm. G. Swann.

Wm. G. Swann, Esq., was elected president of the company; Charles H. Coffin, Esq., secretary; and Dr. Samuel Pride, treasurer.

We learn from the Knoxville Register that the stock taken by citizens of Knox and Blount counties, amounts to \$117,000. The counties of Knox and Blount have already subscribed \$220,000 for ironing and equipping the road. This makes \$700,000 toward the construction and equipment of the road.

Change of Name.

The Logansport and Crawfordville railroad company have changed their title to "Crawfordville, Logansport and Northern Indiana Railroad Company," in pursuance of the act approved Feb. 22, 1853, authorising railroad companies to change their name.

Atlantic and St. Lawrence Railroad.

The lease of this road to the Grand Trunk Line of Canada has been consummated. The Grand Trunk assumes the indebtedness of the former, and agree to pay a dividend equal to 6 per cent. upon its stock. The lease is for 999 years.

Steamboats.

During the warm season, when every steamboat arrives and departs with more than its proper full load, we are surprised to see that the entire crowd of passengers, waiters and coachmen, besides all baggage must be received at one narrow gangway. Such crowding and confusion as is seen at the departure of one of the Fall River, or first class Albany boats is beyond description. The whole process is extremely unpleasant and should no more exist than at a railway station. A very little in the way of system would save much of this confusion.

The ticket window, too, is always a small hole to which all anxious to secure a berth must crowd at once. We see no reason why this place must be the most difficult of access for those who must do business in it. A window for deck passenger's tickets, one for berths, and another for state rooms would relieve the pressure of the crowd at either place.

The open berths are little better than a nuisance, without ventilation, open to thieves, and opposed to decency. We should suppose that every two or three passengers, at least, could be placed in cabin state rooms, which should have a good ventilation from above. If the owners of steamboats are as enterprising in behalf of the comfort of their guests as the railway managers, or the proprietors of our large hotels, we will see a more comfortable manner of steamboat travelling within no great lapse of time.

Railroad Opening.

The Philadelphia and Sunbury Railroad company will open, on the 18th of August, that portion of their road extending from Sunbury to Shamokin, a distance of twenty-one miles.

Baltimore and Ohio Railroad.

The Board of directors of the Baltimore and Ohio railroad, at their meeting yesterday, adopted a resolution for laying a double track from Piedmont to Baltimore, two hundred and sixty miles, and authorized the President to negotiate for a loan to effect this object.

Broad Gauge in Ohio.

We understand that the contract for constructing the broad gauge railroad from the Pennsylvania line, in Trumbull County, to Dayton, Ohio, was awarded to Henry Doolittle, Esq. The contract is for \$7,000,000, the largest, it is supposed, ever taken by one person in this country. Mr. Doolittle takes \$1,000,000 in stock.

Chicago and Mississippi Railroad.

The work on this road, says the State Register, is progressing very rapidly. The iron is laid down over twenty-five miles towards Bloomington. It is the company's intention, as soon as the iron is laid down to Postville, to run their trains to that point, which is about midway between this city and Bloomington. There will then be but about thirty miles of staging between Alton and Chicago. The iron will be laid to Postville within a fortnight from the present time.

At the annual election for directors of the Maysville and Big Sandy railroad, the following gentlemen were elected to serve the ensuing year: Harrison Taylor, Hamilton Gray, Wm. H. Wadsworth, Charles F. Coons, John P. Dobyons, John B. Poyntz, Henry R. Reeder, Samuel Stevenson, Geo. W. Darlington.

Railroad Bridge Completed.

The great iron railroad bridge across the Monongahala river, about one mile above Fairmount, Va., is completed. It is stated that it cost four hundred and ninety-six thousand dollars.

The Effects of Railways.

In 1845, when the St. Lawrence and Atlantic railway was first projected, the value of property in Portland was little over \$7,000,000. It is now \$17,656,612.

W. M. Stockton, Esq., chief engineer of the Carrollton Railroad has been appointed General Superintendent on the South Carolina Railroad, in place of Mr. Lythgoe, resigned. Mr. Lythgoe has received the appointment of Superintendent on the Blue Ridge Railroad.

New Orleans and Opelousas Railroad.

The \$1,250,000, of the bond of the New Orleans Opelousas and Great Western Railroad Company which have been advertised for sale by bids to be received up to 15th September next have been withdrawn from the market. The agents of the company having negotiated \$500,000 of the Bond sufficient for their present wants, with Messrs. Thuslow Lawrie and Co.

The remainder will be held for the future action of the company.

Kentucky.

The citizens of Barren co., on the 8th inst authorized the subscription of \$300,000 to the Nashville and Cincinnati Railroad, by a large majority.

Mobile and Girard Railroad.

Contractors will do well to notice the advertisement of this company in another column, offering nearly the whole of this line for contract. The route of the above road traverses a very healthy country, and the company have ample means for vigorously carrying forward their work.

Cast Iron Driving Wheels.

Henry A. Chase, foreman of the pattern making department in Vankuran's wheel foundry at the Boston Locomotive Works, has invented an improvement in cast-iron driving wheels, which consists in casting the "counterbalance" in a double-plate chilled wheel opposite the crank-pin in the inner face of the tread, between the two sides, but not touching them. It is cast on the thread, and stands up from it in the hollow part of the wheel, like a plate but is not attached to the hub. The plates of the wheel, therefore, are made of equal thickness throughout, and consequently when cast they contract equally. The counterbalance, or solid plate, cast opposite the crank-pin, inside of the wheel, is therefore free to contract without affecting the side plates after being cast.

Topographical Drawing.

Capt. B. Blandowski, late in the service of the Prussian Government as a topographer, is desirous of an engagement with some engineer, for employment in that profession. Capt. Blandowski has completed for us a very excellent Railroad map of the United States, and it gives us much pleasure to express our entire satisfaction with his services and to recommend him to all in need of the assistance of such a man. Communications addressed to him may be directed to this office.

Car Seats.

The arrangement of our passenger cars is undeniably better than those of other countries, but in the details of their finish we believe with good reason that the English first class coaches excel ours in the particular of comfortable seats. A comfortable car seat is by no means a plain square sack with a hard filling of curled hair, but is a combination of many useful arrangements, by which the body has an easy support in any position and has room for any movement. The requirements of a good seat should be a subject of study among those who make cars.

We have rode many a weary mile in cars, where we could find no rest for our arms except to let them drag in silent pain by our sides. The finish of the window frame was that of an unevenly sloping surface, affording no place of rest. On the other end of the seat the arm rest might have a width, possibly, of two inches of hard wood. The seat backs also would swing so low as to cramp the occupant in a confined position like setting in a basket. There are many cars on different roads having no foot rests, and their absence is painfully regretted by a weary traveller approaching the end of a journey of perhaps 500 miles. They should always be placed where the feet may have a natural support upon them; neither too high nor too far distant from the seat.

A continuous rack should always be laid over the window, instead of occasional hooks from which valises and reticules hang so low as to strike the heads of the passengers. The windows also should be held by permanent latches, instead of friction catches.

Repudiation Repudiated.

Some two or three years since, the Legislature of Mississippi passed a law conferring upon the highest tribunal of that State, jurisdiction in actions in which the State might be a party, brought to test the validity of the *Union Bank Bonds*.—Such actions have been brought, and the Court has decided, *unanimously*, that the State is bound to pay the Bonds, and that no vote of the people, nor any law of the Legislature can affect the question.

We regard this decision as settling the question in favor of the payment of the bonds. The people of Mississippi have never made it an issue that they would not pay the bonds, *provided* they were legal, but took the ground that they had no binding validity. They had too much respect for fair dealing to say that they would not pay an honest debt, so they assumed that the claim made upon them was not an honest one. The Court of Appeals has now decided the claim to be valid, and the State has now got to face the music; either go for repudiation square out, or pay up. That she will do the latter, we have no doubt. Repudiation is no more popular on this side of the water than in England. The people of Mississippi will be anxious to wipe off a stigma which each citizen is beginning to feel as a personal disgrace. There is no doubt that a very large proportion of propertyholders are decidedly in favor of resuming payment, and this policy, we are assured, will soon become the popular sentiment of the State.

There is another cause operating powerfully towards this result. Until the credit of the State is re-established, the construction of railroads within her limits, except with the means of her people, will be out of the question. No road, claiming to

be a Mississippi road, can hire money in this, nor in a foreign market. A restoration of state credit, therefore, is indispensable to promote the best good of the State, in a pecuniary point of view.—To continue a repudiating State much longer is a matter of impossibility. If the creditors of Mississippi will wait patiently a little longer, they will receive ample, though tardy justice.

First Alabama Locomotive.

We observed, at the railroad depot, a splendid new eighteen ton engine, the "Edgar Thompson," constructed at the machine shops of the Montgomery railroad. It was a beautiful specimen of mechanism, and contrasted pre-eminently with one of Baldwin's best and latest engines placed beside in finish and perfection of construction. It was designed by Mr. Freeman, the superintendent of that department, and is the first locomotive built throughout in Alabama, or south of Richmond, although Mr. Freeman has often rebuilt others almost wholly on their original models. It is constructed by Southern mechanics, and is a most creditable and beautiful specimen of the perfection to which this section is progressing in the mechanical arts.—*Montgomery Journal*.

A fine portable, stationary steam engine, from Montgomery, is now running in the Crystal Palace.

Railroad Convention.

A railroad convention was held at Richmond, Ky., on the 25th ult. Besides numerous delegations from Kentucky, it was attended by delegates from North Carolina, Virginia, Ohio and Tennessee. Col. J. Speed Smith was the president. Judge Breck, from a committee appointed for that purpose, reported a series of resolutions setting forth the necessity of railroad connection between the valley of the Ohio and South Atlantic seaboard, and with a view of carrying out this object, recommending the construction of a railroad from Lexington to Cumberland Gap uniting with roads from Virginia, Tennessee, North Carolina, South Carolina, and Georgia. A committee was appointed to solicit a charter from the Legislature of Kentucky, and twenty delegates were appointed to attend the convention at Ashville, N. C., on the 25th of August.

Cheraw and Darlington Railroad.

"We are gratified to be able to announce," says the Darlington Flag, "that the section of this road, between Darlington C. H. and the terminus on the Wilmington and Manchester railroad, was on the 6th inst. let out for grading, &c. The entire contract was let to three or four of our wealthiest and most energetic citizens, who have had great experience in similar work on the Wilmington and Manchester railroad, and who, we are assured, will speedily accomplish the job as soon as the crops are laid by.

Warsaw and Rockford Railroad.

This company was chartered by the Illinois Legislature, February 10th 1849, and received, June the 21st 1852, an amendment to their charter, by which the time in which they were allowed to construct their road was extended to February 10th 1861. Their capital stock was fixed at \$1,000,000.

By the recent report of the Engineer of this road, W. R. Kingsley, Esq. we learn the length of line surveyed, from Warsaw to Oquawka, is sixty miles. The distance between Warsaw and the upper landing at Nauvoo is eighteen miles, and the fall of the river 23 2-10ths feet.

The line is ultimately to extend to Port Byron and Janesville.

The estimate of Mr. Kingsley, for the cost of the first sixty miles of the road, completely equipped is \$1,119,068.50, or \$18.651,16 per mile.

T. S. O'Sullivan, Esq., the consulting engineer, estimates the entire cost to Port Byron, one hundred and ten miles from Warsaw, at \$2,665,000 equal to \$24,250 per mile.

An important object of this road is the means of transportation, at all seasons and stages of water, around the upper and lower rapids of the Mississippi, and the consequent benefit to the towns on the line and the city of St. Louis.

Book and Job Printing.

The undersigned have added to the PRINTING ESTABLISHMENT of the "RAILROAD JOURNAL," an extensive OFFICE for BOOK AND JOB PRINTING, which they are now prepared to execute in the BEST manner, and with DISPATCH. They respectfully solicit from RAILROAD COMPANIES, orders for the PRINTING of Exhibits, Time-tables, Circulars, Tickets, &c., &c.

J. H. SCHULTZ & CO.

New York April 9, 1853.

LITHOGRAPHY.

PUBLISHERS, Civil Engineers, Machinists, and others requiring Lithographs, plain or in colors, can depend on the high finish of their designs, along with promptness and dispatch.

DAVID CHILLAS,
50 South 3rd Street,
Philadelphia.

May 1st, 1853.

SIMEON DRAPER, No. 46 Pine-st., offers for sale, a variety of RAILROAD BONDS and STOCKS; also CITY, TOWN and COUNTY BONDS, among which are—

1st Mortgage Convertible Bonds:

	Payable in
7 per ct.—Buffalo, Corning and New York R. R.	New York, 1867
7 per ct.—Western Vermont R. R.	" 1861-71
7 per ct.—Columbus, Piqua and Indiana.	" 1862
7 per ct.—Catawissa, Williamsport and Erie.	" 1867
8 per ct.—Poeria and Oquawka.	" 1863
6 per ct.—Maysville and Lexington.	" 1870
6 per ct.—Dauphin and Susquehanna Coal Co.	" 1877
1st Mortgage Bonds:	
7 per ct.—Corning & Blossburg.	" 1873
7 per ct.—Buffalo and New York City.	" 1866
7 per ct.—Mansfield and Sandusky.	" 1860
7 per ct.—Toledo, Norwalk and Cleveland.	" 1861
7 per ct.—Vermont Valley.	" 1861
7 per ct.—New Jersey Central.	" 1860-57
7 per ct.—Brunswick Canal Co.	" 1857
7 per ct.—Troy and Bennington.	Troy, N.Y. 1862

Also, second Mortgage bonds of many of the above companies, and—

7 per ct.—Saratoga and Washington R. R. New York, 1862	
7 per ct.—Troy and Boston.	" 1864
7 per ct.—Muscougee Railroad.	Savannah, 1862
7 per ct.—Huron and Oxford.	New York, 1862
10 per ct.—Mansfield and Sandusky R. R. Co.	" 1855-57
7 per ct.—Township of Portland, Ohio.	" 1862
7 per ct.—City of Dayton, Ohio, guaranteed by Mad River R. R.	" 1861
10 per ct.—City of Keokuk, Iowa.	Keokuk, 1863
7 per ct.—Town of Huron, Erie county, Ohio.	Huron, 1861
7 per ct.—Town of Newark, O.	New York, 1860
7 per ct.—City of Sandusky, convertible into Junction R. R. Stock.	" 1866
7 per ct.—State of California.	" 1862-72
7 per ct.—Mortgage bonds of the Atlantic Steamship Co.	" 1855
12 per ct.—Improvement Scrip of the State of Wisconsin for improvement of Fox River.	" 1862
Rutland and Whitehall Stock, with guarantee of 7 per cent. dividend by Saratoga and Washington Railroad.	
Stock in the Western Vermont R. R. Co.	
Stock in the Mad River R. R. Co.	
Stock in the Buffalo, Corning and New York R. R. Co.	
Stock in the Mansfield and Sandusky R. R. Co.	
Stock in the New York and Virginia Mail Steamship Company, paying 20 per cent. dividends.	

OFFICE CINCINNATI, HAMILTON and DAYTON Railroad Company.—Cincinnati, Aug. 9th, 1853.—The directors of this company have this day declared a dividend of five per cent. on their capital stock, payable to the stockholders registered in Cincinnati on demand, and to those registered in New York, on and after the 25th inst., at the office of the Ohio Life Insurance and Trust Company, in New York.

1m.

FRANK S. BOND, Sec'y.

Notice to Contractors.

PROPOSALS for the Grading, Masonry and Bridging of portions of the Girard and Mobile railroad, will be received at the Railroad Journal Office, New York, on the 1st of October next.

Plans, Profiles and other required information will be furnished at that time. The entire length of the road is 225 miles; commencing at Girard, in Russell County, on the west bank of the Chattahoochee river, opposite Columbus, Ga., and running to Mobile, 52 miles south of Girard, is under contract, 23 miles nearly complete. The amount of subscription up to date is \$2,766,000. The probable cost of the road is \$4,000,000.

That portion of the line between Greenville and Mobile (115 miles) will be placed under contract as soon as the Mobile subscription of \$1,000,600 becomes available.

ROBT. S. HARDAWAY, President.
GEO. S. RUNEX, Chief Engineer.
Girard Railroad Office, 6th July, 1853.

Notice to Contractors.

ST. LOUIS AND IRON MOUNTAIN RAILROAD.

PROPOSALS will be received at the office of Company in St. Louis, Mo., for the Graduation, Masonry and Bridging of that portion of the St. Louis and Iron Mountain Railroad included between St. Louis and the Iron Mountain, or Pilot Knob, distance about 84 miles. The preliminary surveys and approximate locations are now complete, and the final location for construction in rapid progress, and may be closed by the 1st Sept. Meanwhile, profiles and plans, now ready, will, with examination of the country, give all necessary data.

The work on this road is heavy, including three tunnels, and much rock work and masonry, about 20 miles of the road, shows "side-hill" work, and the balance heavy through work. The Iron Mountain is 700 feet above the river at St. Louis; but two principal depressions are to be crossed before reaching that height. The country passed through is healthy and well watered.

Proposals will be received (by quantities) for the whole or a part of the road, but contracts will only be made with responsible parties. No contracts will be closed before the 15th of August, and no sooner thereafter than satisfactory offers are received from responsible parties. The road will hereafter be extended to the Arkansas line, to connect with the Cairo and Fulton road, and a branch to the Mississippi River, at Cairo or new Madrid, is also contemplated.

WM. M. M'PHERSON, Pres't.
THOS. S. O'SULLIVAN, Consulting Engineer.
J. H. MORLEY, Eng. in Charge.
4w. St. Louis, July 21, 1853.

BRANDS' LIQUID,

FOR DISSOLVING AND PREVENTING

INCRUSTATIONS IN STEAM BOILERS,

It is acknowledged by all who have used it, to be the best preventive ever introduced to the notice of the public. It is not injurious to the Boilers, even if used in large quantities, and is now in general use in a great part of Europe, on Railroads and Steamboats, and for Stationary Boilers.

By the use of this liquid, old incrustated boilers, and principally tubular boilers, which from their construction are in general very difficult and in some cases impossible to be cleaned, may be freed from incrustation in a few days, and by the continued use of it kept entirely free from any future accumulation, thereby increasing the generation of steam, reducing the consumption of fuel and diminishing the danger of explosions.

The proprietors of Brands' Liquid are so confident of the merits of this invention, that they offer one barrel *gratis* to parties willing to make a trial, and to be paid for only in case of success.

Directions for the use of Brands' Liquid, with testimonials, together with full particulars, may be obtained from the Agents, Messrs. BOURRY & ROEDER, Consulting and Mechanical Engineers.

Aug. 10, 1853.

333 Broadway, N. Y.

N. York and N. Haven R. R.

NOTICE OF SUMMER ARRANGEMENTS,

Commencing Monday, May 9, 1853.

TRAINS FROM NEW YORK.	TRAINS TO NEW YORK.
7 A. M.—Accommodation for New Haven.	5.30 A. M.—Special, from Port Chester.
8 A. M.—Express for Boston, stopping at Stamford and Bridgeport.	6.00 A. M.—Commutation from New Haven.
9.10 A. M.—Special for Port Chester.	6.15 A. M.—Accommodation for New Haven.
11.30 A. M.—Accommodation for New Haven.	8.15 A. M.—Accommodation for New Haven.
3.00 P. M.—Express for New Haven, stopping at Stamford, Norwalk and Bridgeport.	9.35 A. M.—Express from New Haven, stopping at Bridgeport, Norwalk and Stamford.
4.00 P. M.—Accommodation for New Haven.	1.07 P. M.—Boston Express, stopping at Bridgeport, Norwalk and Stamford.
5.00 P. M.—Express for Boston, stopping at N. Haven.	4.00 P. M.—Special, from Port Chester.
5.35 P. M.—Commutation for N. Haven.	4.00 P. M.—Accommodation for New Haven.
6.30 P. M.—Special for Port Chester.	9.30 P. M.—Boston Express, stopping at Bridgeport, Norwalk and Stamford.

GEORGE W. WHISTLER, Jr., Supt.
New Haven, May, 1853.

SIXTY MILES DISTANCE SAVED!—ONLY THIRTY-SIX AND A HALF HOURS TO CHICAGO.

MICHIGAN SOUTHERN RAILROAD LINE, carrying the Great Western U. S. Through Mail—FOR CHICAGO AND ST. LOUIS, MILWAUKEE, RACINE, KENOSHA, and all Ports on Lake Michigan.—Through from Buffalo to Monroe IN FOURTEEN HOURS WITHOUT LANDING.

The following magnificent and unequalled steamers from the line between Buffalo and Monroe:

EMPIRE STATE, J. WILSON, Commander, leaves Buffalo Mondays and Thursdays.

SOUTHERN MICHIGAN, A. D. PERKINS, Commander, leaves Buffalo Tuesdays and Fridays.

NORTHERN INDIANA, I. T. PHATT, Commander, leaves Buffalo Wednesdays and Saturdays.

One of the above splendid steamers will leave the Michigan Southern Railroad Line Dock, at 9 o'clock, P. M. every day, (except Sundays) and run direct through to Monroe without landing, in 14 hours, where the Lightning Express Train will be in waiting to take passengers direct to Chicago in 8 hours; arriving next evening after leaving Buffalo.

THE LAKE SHORE RAILROAD, runs in connection with this line, forming the only continuous line of Railroad to Chicago and the Illinois River.

For Through Tickets, by New-York and Erie and Buffalo and New-York City Railroad via Buffalo, or by the People's Line of Steamboats, Hudson River Railroad via Albany and Buffalo, apply to

JOHN F. PORTER, Agent,
No. 193 Broadway, corner Dey-st., N. Y.

GREAT WESTERN MAIL LINE.—SIXTY MILES DISTANCE SAVED, by taking the MICHIGAN SOUTHERN AND NORTHERN INDIANA RAILROAD.

Through tickets for Chicago, St. Louis, Milwaukee, Racine, Kenosha, Waukegan, and Sheboygan, by New York and Erie Railroad via Dunkirk, and Buffalo and New York City Railroad; People's Line of Steamboats, Hudson River Railroad, via Buffalo, connecting at Buffalo with the splendid steamers EMPIRE STATE, J. WILSON, Commander, Mondays and Thursdays; SOUTHERN MICHIGAN, D. PERKINS, Commander, Wednesdays and Saturdays; NORTHERN INDIANA, I. T. PHATT, Commander, Tuesdays and Fridays; leaving Buffalo every evening (Sundays excepted). These steamers are low pressure, built expressly for the Lake trade, and for finish, speed, strength and safety, have no superiors anywhere.

The connections with the Express Trains at Toledo and Monroe, for Chicago and St. Louis, are perfect, and can be relied upon.

Forty hours from New York to Chicago. Time and money saved by taking this Line.

Passengers preferring it, can take the Lake Shore Railroad to Toledo, the Michigan Southern and Northern Indiana Railroad to Chicago, thence by the Rock Island Railroad to La Salle, forming the only continuous line of Railroad to the Illinois river.

For through tickets or freight apply to
JOHN F. PORTER, Agent, 193 Broadway, cor. Dey st.

New York and Erie R. R.

PASSENGER TRAINS leave Pier foot of Duane street, as follows, viz:—

DAY EXPRESS, at 6 a. m. for Buffalo direct, over the N. Y. and E. R. R., and the Buffalo and New York City R. R., without change of baggage or cars; and also for Dunkirk.

MAIL, at 8 a. m. for Dunkirk and Buffalo, and all intermediate stations. Passengers by this train will remain over night at any station between Susquehanna and Corning, and proceed the next morning.

ACCOMMODATION, at 12½ p. m. for Delaware and all intermediate stations.

WAY, at 3¼ p. m. for Delaware and all intermediate stations.

NIGHT EXPRESS, at 6 p. m. for Dunkirk and Buffalo.

EMIGRANT, at 7 p. m. for Dunkirk and all intermediate stations.

On Sundays only one Express Train—at 6 p. m.

The Express Trains connect at Dunkirk with the Lake Shore Railroad for Cleveland, Cincinnati, Chicago, etc., and at Buffalo with first class splendid steamers for Cleveland, Sandusky, Toledo, Detroit and Chicago.

OWEN MINOT, Supt.

\$1,000,000 Loan

\$1,000,000 LITTLE MIAMI RAILROAD COMPANY 6 PER CENT FIRST MORTGAGE BONDS FOR SALE.

OFFICE OF WINSLOW LANIER & Co. }

No. 53 Wall st., June 18, 1852 }

THE LITTLE MIAMI RAILROAD COMPANY offer for sale ONE MILLION of their SIX PER CENT BONDS, with Coupons, Interest and Principal payable in New York, the former half-yearly, 1st of November and 1st of May.

They are in sums of \$1,000 each, payable 1st of May, 1853.

These Bonds are issued under express authority of the Legislature of the State of Ohio; are a part of the \$1,500,000 Loan authorized to be issued by a vote of the stockholders, for the purpose of raising means to make a double track; the greatly increased and increasing business of the road makes this absolutely necessary.

The Little Miami Railroad is eighty-four miles long, commencing at the City of Cincinnati and terminating at Springfield; is now in complete running order; has cost, including equipments, stations, station houses, &c., up to this date, \$2,708,109 19.

This Company own stock in the Columbus and Xenia Railroad Company to the amount of \$386,000, which now commands a premium of 20 per cent. Also in the Hillsborough Road, to the amount of \$11,716.

The receipts of the Road have been as follows:

For the year ending—

December 1, 1844.....	\$18,632 26
December 1, 1845.....	46,327 58
December 1, 1846.....	116,052 02
December 1, 1847.....	221,139 52
December 1, 1848.....	280,085 78
December 1, 1849.....	321,398 82
December 1, 1850.....	405,597 24
December 1, 1851.....	487,845 89
December 1, 1852.....	526,746 35
The receipts from Dec. 1 to May 1, (last 5 months).....	260,051 27
For the same time the year before.....	172,281 18

Increase in 5 months.....\$87,770 09

The position of this road being the natural, shortest and most usually travelled route from Cincinnati and the vast country south and west of it, to the northern cities, must ever make it one of the most important and profitable lines in the country.

An inspection of a map will show its connections to be many and important. This road operates the Columbus and Xenia road, and runs in connection with the Cleveland and Columbus road, in fact they are now run as one line, greatly to the advantage of all.

Regular annual 10 per cent. dividends have been declared since December, 1847, with an extra dividend of five per cent in 1851. In 1852 two cash dividends, each 10 per cent, were made.

The present surplus and reserved fund amounts to \$98,546 16.

The mortgage covers the entire line of road costing to date.....\$2,708,109 19
To be expended on double track, &c. 1,500,000 00

Value of security.....\$4,208,109 19

The security for the payment of these Bonds is of the most ample character, being a first and only mortgage or deed of trust (excepting one of \$100,000 to the city of Cincinnati) on the Company's Road, Stations, Franchises, net income, &c., to J. F. D. Lanier, Esq., of this city, in trust for the Bondholders, with ample power to take possession of the road, its real and personal estate, franchises &c., and to sell the same to the highest bidder for cash, if default be made in payment of interest or principal. This mortgage is for \$1,500,000, and cannot be increased.

The Stock owned by the Road in the Columbus and Xenia and Hillsborough Railways will much more than pay off the \$100,000 prior lien to the

city of Cincinnati, and all other debts of the Company, except this loan of \$1,500,000.

SEALED PROPOSALS will be received for any sum not less than \$1,000, until Thursday, the 1st of September next, at 3 o'clock P. M.

Proposals will be addressed to WINSLOW, LANIER & Co., Agents of the Company, No 52 Wall st., New York, indorsed "Proposals for the Little Miami Railroad Bonds."

One-half the purchase money will be required to be paid at the time of accepting the bids, the residue in thirty and sixty days. Any purchaser will be at liberty to pay in full at once.

Interest on the Bonds will run from the day of payment.

The above \$1,000,000 will be sold absolutely and without reserve to the highest bidder.

For further information apply at our office.

WINSLOW, LANIER & Co.

Notice to Contractors.

BUFFALO & PITTSBURGH RAILROAD— Sealed proposals will be received at the Engineer's Office, in the city of Buffalo, until the first day of September next, for the graduation, masonry, and for the entire construction of the line of road, (about 20 miles,) between Ellicottville and the Pennsylvania State Line, in the valley of the Tunungwant.

Plans and Specifications will be ready for inspection at the office of the Engineer on and after the 20th day of August inst. The proposals may be made for the grading masonry, ties, fencing and entire construction in a single proposition, or for the same and all items separately and in independent propositions; and proposals as above for a single section or any number of sections will be received; the Company reserving the right to reject such propositions as are not satisfactory. Proposals will also be received in like manner, for the balance of the road from Ellicottville to the city of Buffalo, distance about 50 miles, up to the 20th day of September. Plans and specifications for which will be ready for examination at the office of the Engineer from and after the 10th day of Sept. next.

Any further information desired may be obtained by addressing Hon. Orlando Allen, President of the Company, Buffalo.

Proposals are invited from contractors of ability for the whole road. Buffalo, August 2, 1853.
au4t31 E. R. BLACKWELL, Chief Engineer.

To Contractors.

NORTHERN INDIANA RAILROAD.

SEALED PROPOSALS will be received at the office of the Company in Toledo, Ohio, until the first day of September next, at noon, for grubbing and clearing, grading, bridging, superstructure and fencing of that section of the new line of said Road, from its junction with the Auburn and Eel River Railroad, to the town of Goshen, in Elkhart county, Ia., a distance of 51 miles. The line is divided into sections of about one mile containing from 7,000 to 65,000 yards of earthwork each, and in the aggregate about one million yards.—Proposals may be made for one or more sections, Maps and Profiles of the line, and plans and specifications of the work, may be examined at the office of the company in Toledo, on and after the 20th of August inst.

The directors reserve the right to accept or reject proposals, as they may deem the interests of the company to require.

J. H. SARGENT,
Asst. Chief Engineer.

Office of Nor. Ind. R. R. Co.,
Toledo, August 4th, 1853. }

India-Rubber Railroad Car Springs, etc.

THE UNITED STATES CAR SPRING COMPANY, having completed their new Factory, are manufacturing and furnishing to Railroad Companies, and Car Builders, RUBBER SPRINGS of the best quality, on the most favorable terms. Also, McMullen's superior WHITE HOSE, not only for Railroads, but all other purposes, and of any size or thickness required.

Aug. 10, 1853.

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Office No. 25 Cliff street,
New York.



WHITE'S SUSPENSION BRIDGE, OF
WOOD OR IRON.

A Model may be seen at the office of CHARLES T. GILBERT, 80 Broad St. N. Y.

Length of span, anything short of 1,500 feet with perfect safety for every kind of travel. The above cut represents a Wooden Bridge with a roof. The arrangement for the Iron Bridge is such as to avoid all the bad effects of changes of Temperature. For a full description, see pamphlets; for further information, respecting models, rights, &c., apply, by letter or otherwise, to ARTHUR WHITE, or JOSEPH P. TRAYER, Proprietors, Cambridgeport, Mass.

Office next door to the Athenaeum.

To Contractors.

MILWAUKEE AND MISSISSIPPI RAILROAD.

THE GRADING, BRIDGING and MASONRY for the Milwaukee and Mississippi railroad from Madison, the capital of the state to the crossing of the Wisconsin river—a distance of about 35 miles—will be let on the 22d day of August, 1853, to be completed on or before the first day of April 1854.

The line will be divided into sections of about 1 mile in length, and the proposition may include one or more of them. About twelve miles of this work is quite heavy, averaging some 30,000 cubic yards per mile, which will make good Winter work.

It is also the expectation of the railroad company to have the location of the balance of the road to the Mississippi river—about seventy miles—ready for letting by the middle of September, 1853.

Contractors will find this a desirable work, the excavation being mostly sand and gravel, besides it is easy of access, and is through a healthy and well watered section of the state.

Propositions will also be received for 100,000 CROSS TIES, delivered anywhere on the line of the M. & M. R. R., between Milwaukee and the Wisconsin river—to consist of White Burr, Red Oak and Red Elm; to be six inches in thickness and not less than six inches face, and eight feet in length.

The plans, specifications and profiles will be ready for examination on and after August 15, 1853.

A. L. CATLIN, Contractor.

EDWARD H. BRODHEAD,
Chief Engineer.

Notice to Contractors.

JEFFERSONVILLE RAILROAD.

SEALED PROPOSALS will be received at the office of the Company at Jeffersonville, Indiana, until 10 o'clock, A. M., on Wednesday, the 7th day September, 1853, for the clearing, grading and bridging the road between Edinburg and Indianapolis.

Proposals may be made for sections, divisions, or the entire line, about 30 miles, payable in the 7 per cent mortgage bonds of the Company or part bonds and part cash, and also for payments entirely in cash.

The company reserves the right to accept such proposals as in their judgement will best secure the prompt construction of the road, and to reject all, if none are satisfactory.

The route traverses a fertile country, furnishing abundant supplies of all kinds, and the line is easy of access at all points.

Bidders will please give their post office address.

WILLIAM G. ARMSTRONG, President.

Jeffersonville, July 9, 1853.

Notice to Contractors.

SEALED PROPOSALS will be received at the Engineer's Office of the Pittsburg, Maysville and Cincinnati Railroad, in M'Connellsville, until the 20th of August, for the Graduation and Masonry of the line of road (about 35 sections) between the Muskingum River and the Central Ohio Railroad.

Bids enclosing proper testimonials will be received for the whole or any number of the above sections.

Plans and specifications will be ready for examination after the 20th of July.

The division between the Muskingum and Hocking Rivers will be offered for contract as soon as the location is completed.

ROBERT M'LEOD,

Chief Engineer.

M'CONNELLSVILLE, June 4th, 1853.